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PRESIDENTIAL ADDRESS*

Dynamic Medicine and Rehabilitation in the Space Age

By

COLONEL CHARLES R. MUELLER, *U. S. Army, Retired*

ONE of the duties of the President of the Association is to keynote the Convention. Also in this pleasant obligation is the theme of welcome—welcome especially to our distinguished representatives of friendly Governments who have given so much of their time and energy to come to Washington to join with the Association of Military Surgeons of the United States in their effort to learn and disseminate professional information. To those guests I am most anxious that you find here an atmosphere of helpfulness and genuine friendship and that when the activities of this Convention have become history you will carry home with you gratifying personal memories which you will long cherish.

I shall not dwell at length on the activities of the Association. In its progress, however, it has expanded and diversified its objectives and activities in related fields and, as the need arose, seized the opportunity for greater service to a progressive membership. We have become, in reality, an organization of patriotic men and women with professional identification in the life sciences, having as our common goal the application of joint scientific, managerial and technical talents whenever the need arises.

At this meeting during the next three days it is hoped that you will find that the scientific program reflects this combined effort.

The theme "Dynamic Medicine and Rehabilitation in the Space Age" should not be construed to indicate that the program will be given over entirely to this facet of medicine.

We thoroughly appreciate that the space age will open new fields of medical endeavor; we likewise are mindful that many problems of the preatomic age still remain unsolved. For example, to mention a few upon which much time and energy has already been spent, there is that of heart disease, arteriosclerosis, multiple sclerosis, cerebral palsy, cancer and leukemia, and still these problems have resisted solution. Sarcoidosis may be mentioned as one of those diseases which has been given long and intensive study by many investigators but still remains etiologically a mystery. Here a breakthrough appears to be imminent through the searching and meticulous work of Doctor M. M. Cummings of Research Service of Research and Education of the Veterans Administration. He has traveled far and wide in the course

* Presented at the 65th Annual Meeting of the Association of Military Surgeons of the United States at its Opening Ceremony, November 17, 1958, Washington, D.C. Colonel Mueller represented the Veterans Administration in his capacity as president of the Association.

of this study. It is my opinion that the answer to this problem will come out of this great work. Further than this I cannot comment.

For those who have been caught in the waves of diseases that have left their crippling scars we must give hope and assurance, knowing that with time more and improved methods of rehabilitation will develop. No longer is it sufficient to say "No more can be done." This, in effect, is true only if our efforts lag.

The space age no doubt has and will open further new fields of endeavor. Many minds and much effort is being devoted to exploring the field or fields to be traversed on going through space with the hope of making a landing on the moon. I doubt if this trip will be accomplished for some time to come but at the same time, in view of what has already been accomplished in the exploration of the field of space, I am not sufficiently naive nor have I the training to permit me to say it will never be accomplished. In support of its accomplishment Frederick Durant of the American Rocket Society has been quoted as predicting that by the year 2000 the first landing on the moon will have been made. He emphasized that space flights would be made well before that year and perhaps trips will have been made *around* the moon. However, by the year 2000 flights to the moon should be possible and safe return to the earth effected.

In space, man will be confronted by an environment which he never previously experienced, i.e., long periods of time in a state of "free fall" or weightlessness, long time exposure to ultra violet, cosmic radiation and meteor bombardment.

Protection against ultraviolet radiation can, at least in part, be effected. The effect of cosmic radiation offers a greater challenge. The effects of these rays on man are not definitely known. Certain extrapolations, however, have been made. The possibility of genetic damage must be considered. Mueller, in Chapter XVII in *The Biologic Effects of Cosmic Radiation* by J. J. Schafer, however, believes the risk is not great. In his opinion people exposed to medical x-ray machines run just as great a risk. It may be said that he makes no prediction, however, about persons who travel in space.

Accidents due to meteors offer a potential hazard which cannot be avoided. Whipple, the Harvard astronomer, has studied the possibility of the vehicle being hit by a meteor. Below altitudes of 49 to 62 miles there would be little danger since the earth's atmosphere vaporizes the meteors. In significantly higher altitudes the picture becomes a more somber one. In altitudes of 62.1 to 74.6 miles it is one hit in 2000 per day. These are but a few of the problems which offer considerable food for thought before man ventures into space. The biologic, psychologic and physiologic effects on the human, in addition, have already been the subjects of intense study by the various scientific groups interested in space.

Rehabilitation has already made outstanding contributions in the various fields of medicine. With these advances patient care, comfort and life expectancy has measurably

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THE WHITE HOUSE
WASHINGTON, D.C.

NOV. 13, 1958

COLONEL CHARLES R. MUELLER, M.C., USA, RETIRED

PRESIDENT THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

TO THOSE ATTENDING THE 65TH ANNUAL CONVENTION OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES I SEND GREETINGS.

IN THE CEASELESS EFFORT FOR INCREASED MEDICAL EFFICIENCY AND A HEALTHIER WORLD FOR ALL MEN, THE MEMBERS OF YOUR ASSOCIATION HAVE PLAYED AN IMPORTANT PART. AS WE MOVE INTO THE SPACE AGE, I AM SURE THE WORK OF THE MILITARY SURGEON WILL ASSUME GREATER DIMENSIONS OF RESPONSIBILITY AND PROMISE.

I AM DELIGHTED TO EXTEND BEST WISHES FOR A FINE CONVENTION AND A PLEASANT STAY IN THE NATION'S CAPITAL.

DWIGHT D. EISENHOWER

advanced. Rehabilitation in the space age will most assuredly be found abreast with the needs required in this new field. It may well be said that the same team effort will be directed toward the solution of problems arising in space medicine as has been the case in problems associated with specific diseases in preatomic medicine. Those responsible for the development of space travel have great need for our counsel. This may be assured upon presentation of the problem. Teams already are exploring and making studies in the different facets involved in space travel.

Our Association desires to promote or improve the communication of information and the exchange of ideas between health personnel of the different services of our country and also between the health personnel of friendly nations.

For the further development of the Association we would be most happy to see a greater increase in membership participation of younger reserve officers on active tour.

A great deal of hard work has gone into preparation of this convention. It would be impossible for me to name all those who have worked so untiringly and given so much of their time in this connection—the general chairman, the assistant chairman, the program chairman, the chairmen and members of all of the essential committees, scientific exhibitors, commercial exhibitors, industry supporters and, last but not least, the wonderful band which entertained us and the perfect color guard.

To each and every one of you on behalf of all of us—our sincere and heartfelt thanks.

I wish to comment especially upon the excellent work performed by the Executive Secretary of the Association, Colonel Robert Bitner. Throughout the year the program to him was one of the main subjects of consideration and continuing study. He worked constantly and untiringly with the members of the various committees. I am certain that all who knew of his activities which were directed toward making our convention an outstanding one will agree that he merits a definite acknowledgment for his outstanding efforts in this, the President's address.

I am happy to announce that Smith Kline and French Laboratories of Philadelphia have sponsored an annual lecture series on mental health to be named the "William C. Porter Lecture." I knew Colonel Porter from the days when we were Captains in the Army Medical Corps. He was an excellent student, an able teacher and untiring in his efforts to teach some of us on the Medical Service at Walter Reed a few of the simpler elements of psychiatry. It therefore gives me great pleasure in the thought that the lecture was to honor posthumously the work of this doctor. The initial lecture will be presented Tuesday, November 18, 1958.

It was with sadness that I mention the sudden death of our Third Vice-President, Doctor John W. Cronin, Assistant Surgeon General of the Public Health Service, on March 26 following a staff conference. His position has been filled by the Surgeon General of the Public Health Service, Doctor Leroy Burney.

I am confident that we shall derive great benefit from our attendance at this convention. I wish to all of our members and guests a most enjoyable as well as profitable experience by way of the three days devoted to this convention.

Official Air Force Photo

BRIG. GENERAL HAROLD H. TWITCHELL, USAF (MC)

Our New President

BRIGADIER GENERAL HAROLD H. TWITCHELL, United States Air Force Medical Corps, was elected President of the Association of Military Surgeons of the United States at its 65th Annual Convention held in Washington, D.C., November 19, 1958. He assumed office on January 1, 1959, as the 64th President of the Association.

General Twitchell, now Surgeon of the U. S. Air Forces in Europe, was born in Lancaster, New Hampshire, May 13, 1904. After his high school years he attended the University of Vermont where he received the B.S. degree in 1925 and the M.D. degree in 1929. During his medical school years he held a commission as Second Lieutenant in the Infantry Reserve. After receiving his medical degree he was commissioned a First Lieutenant, Army Medical Corps Reserve, and entered on active duty as an intern at Walter Reed General Hospital. He has remained on active duty in the military service.

In the next ten years he served at various military hospitals and attended the Army Medical School, Medical Field Service School, and the School of Aviation Medicine.

General Twitchell became staff surgeon for the Second Air Force, at Colorado Springs, Colorado, July 1, 1942, and in June 1944 became staff surgeon for the XX Bomber Command, moving with it to the Pacific theater in October 1944. From July 1945 to February 1946 he was staff surgeon for the Twentieth Air Force in the Pacific, returning then for duty at Fitzsimons General Hospital in Denver.

He became post surgeon at Hamilton Field, California, in August 1946, and was named commander of the Tripler General Hospital, Honolulu, Hawaii, in June 1948.

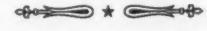
General Twitchell was transferred to the Air Force on July 1, 1949. He was promoted to the rank of Brigadier General April 11, 1951.

On September 1, 1951, he became Director of Plans and Hospitalization in the Office of the Surgeon General of the Air Force, Washington, D. C., and in July 1952 moved to the Office of the Secretary of Defense as chief of the Planning Coordination Division, Armed Forces Medical Policy Council. He returned to the Office of the Air Force Surgeon General in August 1953 for duty as Director of Professional Services. On September 1, 1955, he became Surgeon for the Continental Air Command, Mitchel Air Force Base, New York, which position he held until January 1958.

General Twitchell is a fellow of the American College of Surgeons, National Board of Medical Examiners, a member of the American Medical Association, and the Aero Medical Association. He is board certified in Aviation Medicine. He is rated a chief flight surgeon. His military awards include the Legion of Merit with Oak Leaf Cluster and three Bronze Service Stars.

With Mrs. Twitchell, the former Barbara Wetherill, daughter of Colonel Richard Wetherill, U. S. Army, he resides in Wiesbaden, Germany. The Twitchells have three children, one son and two daughters.

With the vast accumulation of professional and administrative talent in the Federal Medical Services, the 66th annual meeting of the Association to be held in Washington, D.C., November 8-11, 1959, over which General Twitchell will preside, promises to be another of the brilliant gatherings expected of the Association.



"In this complex era of unprecedented technological progress and of intricate political problems, the future belongs to those who refuse to be awed by its difficulties and resolutely accept its challenges."

GENERAL MAXWELL D. TAYLOR, Chief of Staff, U. S. Army

Panel Discussion of the Chiefs of the Federal Medical Services*

Presided over by
MAJOR GENERAL GEORGE F. LULL, *U. S. Army, Retired*

General Lull: You have before you now a group of individuals who have the answers. They are going to talk for about ten minutes each and after they have finished we will throw the meeting open for questions.

I am going to call on them in the order in which their names appear on the program. The first one is going to talk to you on the training of personnel other than purely medical officers. Major General Silas B. Hays, The Surgeon General of the Army.

MAJOR GENERAL SILAS B. HAYS, SURGEON GENERAL, U. S. ARMY

FOR many years the Association of Military Surgeons has seen fit to include in its membership many other people than doctors of medicine. I think this is a very wise decision because in the military medical field there are many others than the doctors of medicine alone.

My assignment covers the education and training in military medicine for personnel other than MD's.

In peacetime these people play an important role—one which is becoming more important every year. Years ago the doctor and his black bag carried medical service to the patient—now this is changed. For diagnosis he needs laboratory facilities, x-rays, electrocardiograms and many others. For treatment he also needs assistance: anesthesia, operating room assistance, intravenous therapy, skilled nursing care, and physiotherapy, to mention only a few. Without these various types of assistance the doctor can make available to his patient only a small part of the armamentarium now at his command. Medicine today is specialized. No longer does the doctor with his black bag personify complete medical service. Today a team of specialists is involved—not only the various specialists of the medical profession itself, but many others—the nurse with her several specialties, the x-ray technician, the various laboratory specialists, the psychologist, the dietitian, and many others.

As the frontiers of science continue to advance, and as more knowledge in the medical sciences becomes available further specialization is inevitable. As a corollary to this, the specialist in the paramedical professions will become a more important and indispensable part of the team. A team to be effective must have a leader, a captain, a quarterback, call him what you will. On the medical team this man is the physician. He is the one who has been trained in the care of the whole patient and who is ultimately responsible for that care. Consequently he is responsible for the assignment of tasks to the other members of the team and for the determination of the limits of these tasks.

In the peacetime practice of medicine these limits are fairly well defined by custom and by law, and the education and training of the various team members is in accord with these limits. In wartime or time of emergency however, the situation is different. This is particularly true in the type of war envisaged today involving mass casualty situations. The number of physicians and surgeons available will be totally unable to cope with the number of casualties. Paramedical personnel will have to take over many of the duties and procedures which are in peacetime, by custom and law, reserved to the physician and surgeon. Included are such things as: the determination of administration of medications—sedatives, narcotics, antibiotics,

* Held on Monday, November 17, 1958, the first day of the 65th Annual Meeting of the Association of Military Surgeons of the United States, Washington, D.C.

as well as other types of therapy—intravenous fluids and transfusions, simple surgical procedures, clamping and ligating uncontrollable bleeders, simple debridement; the administration of anesthesia, and the administration of oxygen. These are the types of procedures which may be life-saving if done promptly. They are all procedures which require education and training of a type not ordinarily given paramedical personnel in peacetime.

Traditionally the military has gone further along this line than has civilian medicine in the training of our enlisted corpsmen in the emergency care of the wounded. Recently, in accord with our concepts of the problems involved in mass casualty care, we have expanded this training both in the types of procedures taught and in the numbers of people who receive the training. Medical corpsmen are trained in emergency care and treatment, transportation of casualties, splinting, control of hemorrhage, rudimentary field surgery, nursing care and symptom recognition. In addition all nonmedical enlisted personnel receive basic instruction in self and buddy emergency care with emphasis on the few simple procedures that may be life-saving.

We have not as yet clearly defined the roles of dentists, veterinarians and nurses in a mass casualty situation. These groups have good basic knowledge in the biologic sciences and are skilled in their professions. With a minimum of additional training they can, in emergency situations, perform complex life-saving procedures. Presently, dental and veterinary officers receive forty-eight hours of instruction in emergency medical care and field surgery in the company officers course at the Army Medical Service School. At Walter Reed a course in nursing in the medical management of mass casualties is given periodically. It is planned to include in these various courses more of the actual surgical and emergency care technics than has been the case to date. Only in this way can the maximum use of the skills of these important groups be made in time of emergency.

While training in the military in emergency care needs further improvement, the big problem lies in civilian life. By and large individuals in the various specialized paramedical fields are trained and are experienced in their specialties only. However, they are accustomed to a medical environment and work daily with patients and with doctors. Their skills will be needed in a mass casualty situation, but in the early hours or days they could be of greater use in direct emergency patient care performing functions already discussed. The training of these groups must be the responsibility of local medical and health agencies and of the Red Cross. The medical profession must actively support such training and must provide not only the leadership but also much of the actual pick and shovel work of this training. Unless the medical people put their shoulders to the wheel, this important step toward national medical preparedness will falter.

General Lull: The next speaker on the panel is the Deputy Surgeon General of the Navy. He is to speak on the MEND program. This is a program that is not exactly new but is not an old program. Some of you may not be familiar with it. It is the Medical Education for National Defense program. Admiral Bradley.

REAR ADMIRAL BRUCE E. BRADLEY, DEPUTY SURGEON GENERAL, U. S. NAVY

THE phenomenal progress made in medical education in recent times is a source of deep satisfaction to all of us. Most of the notable advances should be well known to this audience, but there is one great achievement of which you may be only dimly aware. This is a program of undergraduate training in military and disaster medicine that has grown rapidly in scope and effectiveness over the past six years as the result of outstanding cooperation between a steadily increasing number of participating medical

faculties and some six or more Federal agencies.

It was widely recognized as early as 1950 that there was urgent need for medical graduates to be better informed concerning the application of principles of medicine and surgery to a military or civil defense situation, if they were to serve competently in the Armed forces or as civilians in time of national emergency. It also was realized that medical faculty members needed an opportunity to learn without prolonged delay what was being accomplished by the Armed Forces in the areas of their special interest.

The first serious attempt to meet these needs was a two-year experimental program of Medical Education for National Defense (MEND) begun in 1952 at the colleges of medicine of Cornell, Illinois, Buffalo, Vanderbilt, and California (at San Francisco) Universities. Through the Department of Defense, the U.S. Public Health Service, and the Federal Civil Defense Administration, seminars and visiting lecturers in military and disaster medicine were made available, and funds were provided for necessary teaching aids, for attendance by faculty members at military and civil defense symposia, and for the part-time services of a local coordinator at each of the five schools that participated in the pilot study.

Evaluation of the experiment in 1954 showed that the results were excellent and that all five schools wished to continue the program. Important aspects of military and disaster medicine had been integrated into existing courses at all levels. In most cases this was done without adding any new courses. Medical graduates were more adequately trained and better motivated. Faculty members acquired a widened knowledge of military and civil defense problems, and the Medical Education for National Defense Program proved to be an efficient method of quickly transmitting new information developed by the Armed Forces to faculty members and students, where the information drawn from military experience often was of great value to those engaged in the solution of civilian problems.

The success of the two-year pilot study was such that it was decided to expand the Medical Education for National Defense Program by increments of ten additional colleges of medicine each year until all schools desiring to participate were included. Although a great many schools had signified their desire to take part in the program, more rapid expansion did not seem feasible because of financial and administrative considerations. With the inclusion of the ten schools currently in process of being oriented, the affiliated schools will number 55, or two-thirds of all the medical colleges in this country that offer four-year courses. Many others are on the waiting list and will be added at the rate of ten per year, or more rapidly if this proves possible.

Each year the ten newly-affiliated schools are briefed and oriented during the nine months from 1 January to 30 September in preparation for the first academic year of full participation in the Medical Education for National Defense Program. In February the ten new coordinators meet with the old coordinators and many of the deans in a conference at which Medical Education for National Defense projects and plans are discussed. In March the deans and coordinators of newly-affiliated schools are taken on an extended Orientation Tour to observe medical activities of the Armed Forces. Those visited last spring were naval facilities in the San Diego, California, area; Army activities at Fort Sam Houston, Texas; and the Air Force School of Aviation Medicine at Randolph Air Force Base, Texas. In 1957, the same facilities were visited and the ten-day tour ended at Houston, Texas, where the 39 participants observed a field trial of the Federal Civil Defense Administration 200-bed Emergency Hospital. This was conducted under Medical Education for National Defense auspices by the University of Texas School of Medicine and Baylor University College of Medicine.

An important Medical Education for National Defense activity is acquainting medical faculty members with specific problems in military and disaster medicine by means of

symposia sponsored by the participating Federal services. There have been 14 such symposia to date, and more than 700 faculty members have attended either one of these symposia or an Orientation Tour or one of the one-week courses on "Management of Mass Casualties" given by the Army.

Five symposia, all of unusual interest, are planned for this coming year. The first of these, on Infectious Disease Problems (particularly gastrointestinal) will be held on 19-21 January at Walter Reed Army Institute of Research. On 4-6 March, the Navy will present Medical Operations and Research in Climatic and Environmental Extremes at the U. S. Naval Medical School, Bethesda. This will include many interesting facts learned from Operation Deep Freeze. A symposium at the Aero-Medical Laboratory, Wright-Patterson Air Force Base, on 8-10 April, will deal with Recent Developments in Aviation Medicine. At Fitzsimons Army Hospital on 30 April and 1 May, Nutrition under Wartime or Disaster Conditions will be discussed by a group of experts, many of whom have been associated with the Interdepartmental Committee on Nutrition for National Defense in making nutrition surveys in foreign countries. Finally, on 11-13 May the Public Health Service, in cooperation with the Navy and the Atomic Energy Commission, will sponsor a symposium on Radiation Health Problems, with emphasis on Environmental Sanitation aspects.

Another aspect of the Medical Education for National Defense effort that has been popular with students and faculty alike is the arrangement for medical officers and scientists who are expert in some field of military or disaster medicine to visit the medical colleges in the capacity of guest lecturers. It provides them with an opportunity to meet career service officers and learn firsthand of the achievements of military medicine. About 300 authorities have appeared as guest speakers, and this year the list will be greatly augmented by a panel of lecturers furnished by the Atomic Energy Commission.

The Medical Education for National Defense Program already has paid important dividends in medical graduates better trained to play their part under any military or emergency situation; in medical faculties better informed of research developments and other advances in the Department of Defense, the Department of Health, Education and Welfare, and the Office of Civil and Defense Mobilization; and in better understanding and closer cooperation between Federal agencies and civilian colleges of medicine. The record to date is a sound basis for planning the earliest possible inclusion of not only two-thirds, but all medical schools in the program of Medical Education for National Defense.

As a further item of interest, there has been Navy-wide augmentation of training all medical, paramedical and non-medical personnel in first aid, self aid and atomic, biological and chemical warfare defense measures.

It has been the experience of the Bureau of Medicine and Surgery that, in the case of a majority of the graduates of medical and dental schools in our country, there is a need for supplementing their doctorate training (after they are assigned to active military duty) in the field of first-aid and self-aid training techniques and survival procedures under adverse or disaster conditions. As a result, the Bureau, in July 1956, set up a program for the intensive naval orientation and indoctrination of all medical officers, both Regular and Reserve, reporting for their first active naval duty. This program is supported by a standardized curriculum for the full-time training of all such physicians for a period of 18 days, which is conducted in six naval hospitals located on the East and West Coasts and at Great Lakes, Illinois (Chelsea, Mass.; St. Albans, N.Y.; Philadelphia, Pa.; Portsmouth, Va.; Great Lakes, Ill.; and Oakland, Calif.). All naval interns are also given this training which is phased gradually during their year in naval hospitals.

Prominent in this program has been a very liberal indoctrination in the element of thermonuclear, biological, chemical and con-

ventional warfare defense—and associated duties and responsibilities of medical officers. To date, approximately 2,000 young medical officers of the Navy have undergone this training, and numerous observations attest to the unqualified success of this project. The immediate result is that they do a better job when they report to their first regular duty station or ship, and they become much more rapidly and effectively integrated into their organization, and are able to carry out their mission realistically.

Traditionally, the Navy has done well in first aid training. It was first required and promulgated officially by President Theodore Roosevelt—on a Navy-wide basis—that "each officer and enlisted person be given instruction to assure a knowledge of and ability in the principles of first aid." The wisdom back of this directive has been borne out in the recorded history of two World Wars and the Korean Conflict, as well as in certain peacetime mass-casualty situations.

Realizing the impact that atomic, biological and chemical warfare defense concepts would have upon plans for military medical and first aid training, the Bureau of Medicine and Surgery last year developed, as an urgent project, a "Syllabus of Lesson Plans for First-Aid Instructors." It is believed that this publication will enable our medical officers and sometimes paramedical personnel, to do a more effective job of teaching nonmedical personnel in the vital essentials of life-saving first aid, "buddy aid," self aid and the ways and means of surviving under extremely adverse or disaster conditions.

In December 1957, a very forthright and positive Secretary of the Navy's Instruction, No. 3500.1, re-emphasized President Theodore Roosevelt's ideas on first aid teaching. This new order provides for Navy-wide standardization for organizing and conducting the training of all persons of the naval service in the proper application and principles of first aid and self aid. It relates that "the disastrous potentialities of atomic, biological and chemical warfare attack render it imperative that an intensive Navy-wide program of augmented, modernized, and standardized first aid and self aid training be conducted on a continuing basis, requiring first aid instructors to employ the Syllabus of Lesson Plans for First Aid Instructors as a guideline for their presentations." It is estimated that this training will reach 600,000 or more persons in the Navy and Marine Corps within a year after the launching of the new program last December. It will be supported more and more by a new series of 12 motion picture films in sound and color . . . all of which are well-integrated with the Syllabus of Lesson Plans . . . and reflect current concepts, including a great deal of new material.

As you know, one of the most outstanding examples of fruitful cooperation between the Armed Forces relates to the inter-service or cross-utilization of training courses and facilities in special weapons effects, atomic, biological and chemical warfare defense, the management of mass casualities, and nuclear medicine, including the clinical employment of radioisotopes in diagnosis and treatment. Not only have medical officers of the Navy attended valuable and well-conducted courses of her sister services, but reciprocally, the Navy has regularly included in its own courses in these fields quotas for the other military services (and in some cases for the Public Health Service and the Veterans Administration medical personnel).

During the past year the Navy Medical Department conducted the largest increase since World War I in the amount and variety of special military medical atomic, biological and chemical warfare defense training for its officers, including Medical Corps, Dental Corps, Medical Service Corps and Nurse Corps. Courses given during the past year, which I will describe, are important examples of continuing efforts to keep naval physicians abreast of medical developments in the nuclear age, and thus serve to strengthen our operational readiness. Some of these courses were offered to other military services, as indicated.

During fiscal year 1958, 91 naval officers attended the two courses given at the Atomic, Biological and Chemical Warfare Defense

Course for Medical Officers, held at the Naval Schools Command, Treasure Island, San Francisco, California. It is anticipated that approximately 100 officers of the Army, Navy, and Air Force will attend the two courses to be given during fiscal year 1959, with quotas as shown:

U. S. Navy
60 Medical Officers
10 Dental Officers
10 Medical Service Corps Officers

U. S. Air Force
10 Medical Officers

U. S. Army
10 Medical Officers

This is an all-inclusive course for thermonuclear, biological, chemical and conventional warfare defense, each course lasting 30 days. The many subjects in the course include delayed radiation; basic concepts of biological warfare defense; casualty estimates relating to nerve and other gas attacks—countermeasures, chemical agents, decontamination demonstrations, sorting (triage) and practical shipboard and field handling of mass casualties, with a large scale practical field exercise for practice and instructional purposes.

In Fiscal Year 1958, 302 Naval Medical Department officers were trained in atomic, biological and chemical defense and management of mass casualties, the latter group at Walter Reed and Brooke Army Medical Centers.

The quotas for the 5-day Military Medical Symposium on Special Weapons and Management of Mass Casualties, given at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland were: USN and USNR, 106 (Medical 42, Dental 7, MSC 43, NC 14); U. S. Army, 75; U. S. Air Force, 75; Veterans Administration, 50; U. S. Public Health Service, 50; George Washington, Georgetown and Howard Medical Schools, 10 each; Montgomery, Prince George, District of Columbia, Arlington and Alexandria County Medical Societies, 10 each.

For a total quota of 436 offered, the actual attendance was about 330.

Two symposia were held—one on the West Coast and one on the East Coast. The two-day symposium on the West Coast was sponsored for the past two years by the District Medical Officer of the 125th Naval District, Rear Admiral Frederick Greaves (MC), USN. Its subject was Medical Problems of Atomic Warfare and Civil Disaster and was attended by approximately 150-200 medical officers. The East Coast symposium on Military Medical Training Program for Reserve Medical Officers at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland, is for active duty training of Reserve Medical Officers, and includes atomic, biological and chemical warfare defense problems. A total of 250 medical officers attended—100 from the Air Force, 100 from the Army, 25 from the Navy and 25 from the U. S. Public Health Service.

Other courses offered:

Twenty medical officers attended the Special Weapons Orientation Course, at the Atlantic Fleet Training Center, Norfolk, Virginia, in order that they may become familiar with the special medical problems that may be anticipated.

Twenty-four medical officers attended the course on The Clinical Use of Radioisotopes at the U. S. Naval Medical School, Bethesda, Maryland.

Six medical officers have participated in Radiobiology and Radiation Safety Programs as an integral part of their training for nuclear submarine duty.

A significant first in nursing education has been the Nurse Training Course in Radioisotopes which has been attended by 12 Navy nurses and 1 Air Force nurse.

Training in Submarine Medicine

The underwater operations of the Navy are rendered specialized medical support by the submarine medical officers, a special designation established during World War II. These physicians are trained in the environmental problems of the submarine serv-

ice, and in addition, in the physiological problems of diving. Both these areas lie beyond the scope of medical school or clinical training programs. Accordingly, they require special in-service courses. For the past decade all submarine officers have received training in all phases of underwater operations. When the nuclear powered submarine appeared, the needs of this program were met by providing additional courses more along academic lines, some of which lead to postgraduate degrees related to radiation biology. This program has provided the Navy with a numerically small but very well trained group of medical officers capable of adapting their skills to the implication of ionizing radiation. As the nuclear power program unfolds it will be necessary to recast the basic in-service course to provide essential information in radiation biology to all and add the course in underwater physiology separately for those who work in the field of diving. Thus through its various possibilities submarine medicine does not restrict its trainees' future development. Rather, it provides additional training not otherwise available which permits them to better perform their military duties and enhance their future professional capabilities.

Aviation Medicine

All aviation medicine is primarily concerned with the care of pilots and other flying personnel. Specifically, Naval Aviation Medicine differs from other service types of Aviation Medicine in that it is primarily concerned with the *techniques, requirements,* and equipment peculiar to Naval Aviation.

Only the Naval Flight Surgeon faces aeromedical problems that result from the operating of aircraft from an aircraft carrier. Here, from a space of approximately 1000 feet long and 200 feet wide, as many as 80 to 100 aircraft are stored, serviced, launched, and landed. Within the limited confines of the flight and hangar decks the complete functions of a large airfield are accomplished. Problems of ground crew protection against noise, vibration, heat, blast, and inclement weather are greatly magnified by the forced compression of many men to a small confined area of a flight deck unable to escape the inherent dangers and physical stresses produced by large numbers of simultaneously operating jet aircraft. Ability and teamwork is the "byword"; stress and fatigue the problems to be dealt with.

The precise flying techniques developed in Naval Aviators are necessarily known and assessed by the Naval Flight Surgeon. He must be ready at all times to advise the senior officers of his air group when an aviator is not able to psycho-physiologically cope with flight problems peculiar to carrier aviation. Acceleration and deceleration stresses to pilots and aircrewmen resulting from catapulting and arrested landings of jet aircraft at comparable high speeds present problem areas for the squadron flight surgeon. He is directly concerned with unique personal airborne equipment and with the location, survival, and rescue of pilots and crewmen at sea. The day-after-day existence of large numbers of men within a relatively confined and noisy space, away from normal terrestrial habitat and families frequently results in greater percentages of psychogenic problems than are present on shore. Normal problems in sanitation, food handling, and habitability are magnified aboard ship.

To meet these problems and to help project Aviation Medicine into future naval aviation operations, the Bureau of Medicine and Surgery staffs and support laboratories for research and development of airborne personal equipment; psycho-physical flight evaluation studies; and emergency escape, survival, and rescue systems and techniques with emphasis being on equipment systems and techniques that are necessarily unique to Naval Aviation.

In conjunction with the Bureau of Aeronautics, studies are conducted on the Navy's human centrifuge at the Naval Air Development Center, Johnsville, Pennsylvania, by programming space flights using a dynamic flight simulator. In this simulator, the pilot with complete instrumentation is able, in the centrifuge gondola, to "fly" a complete mission and to receive all the accelerative effects

he would normally receive were he in actual flight. This is accomplished by a closed loop electronic hookup between the gondola, "cockpit," and electronic computor stations that receive pilot reaction to controls, feeds back resultant simulated aircraft performance to the gondola controls, thus producing realistic forces in acceleration, deceleration, rotation, and other movements that must be further dealt with by the pilot. By being able to pretest pilot reaction to developmental aircraft in this simulator, naval aviation medical personnel have been able to predict actual and potential plane-pilot flight failures and recommend changes in design and techniques.

The development and use of this dynamic flight simulator has resulted in the savings of lives and monies and as aircraft and space craft become more complex and their missions more dangerous, this device shall prove increasingly valuable.

The Navy's full pressure suit program has resulted in a completely operational flight suit that permits mission completion and return capabilities for pilots exposed to atmospheric pressures approach a complete vacuum. In proving this capability recently, a young Naval Flight Surgeon Naval Aviator spent 72 hours within a low pressure chamber at simulated altitudes varying from 80,000 feet to 129,000 feet.

For studies of long-range closed environment problems, six Navy enlisted personnel, five of whom were Corpsmen, spent seven days and nights in a specially designed long-range space flight simulator. Under supervision of NAVAL Flight Surgeons, these men spent programmed time at controls requiring specific skills to measure performance in situations likely to be encountered in space flight.

Because of aeromedical problems peculiar to carrier aviation and the continuing need for investigation for newer and more effective means of protecting the airman from hazards of hostile environment encountered in high speed, high altitude flights, Naval Aviation Medicine will necessarily remain a distinct entity within the sphere of military medicine.

Now, in conclusion, I should like to say that in the event of a major disaster (conventional or war), our officers of the Dental Corps, by the very nature of their excellent professional backgrounds of training, experience and standards of ethics are fundamentally endowed and capable of rendering extremely valuable service in direct support of the efforts of medical officers in many more ways than we may realize. They are perfectly capable of lending sorely needed assistance in highly stressful multiple casualty situations, and in such a capacity a strenuous peacetime training program for dental officers in handling casualities will have paid enormous dividends. The Dental Corps of the Navy has done a splendid job in these fields . . . and has been a true pioneer in developing modern technics and skills in first aid casualty treatment training, especially the startlingly realistic training with whole body manikins in support of these efforts.

General Lull: The next speaker is going to talk about medical education of the medical officer and he is going to approach this not only from the scientific aspect but from certain other angles. General Ogle.

MAJOR GENERAL DAN C. OGLE, SURGEON GENERAL, UNITED STATES AIR FORCE

LAST year this panel discussed the many educational advantages available to members of the Medical Departments of the Armed Forces. These opportunities still exist; in fact, they are expanding, and military medicine continues to attain higher standards of proficiency as evidenced by declining incidence of disease, reduced morbidity, and low noneffective rates for military personnel stationed about the world, many of whom live in areas that would have been considered dangerous to health when I en-

tered the military service thirty years ago.

The military medical services continue to place great emphasis on clinical medicine, and the physicians and surgeons of the military services can be justly proud of the clinical results being obtained within the Armed Forces.

Custom and circumstance have made it somewhat of an obligation for the Armed Forces to provide educational opportunities of which this panel spoke last year. However, I feel it should also be emphasized that the sense of obligation within Armed Forces medical educational fields is a two-way street, or rather there are two sides to the same street; if one side be that of clinical medicine, the other side, and certainly of equal importance in our affairs, is military medicine.

The early history of every conflict that our Armed Forces have engaged in reveals an initial lack of combat support or field military medical knowledge. This deficiency is primarily in environmental and field medicine and medical preparedness for combat support and casualty care and clearance. Medical personnel have eventually risen to the occasion. However, we still recall that as late as the Korean Conflict the medical chief's principal plea was for officers experienced in field sanitation, environmental and preventive medicine, and with enough military experience and tactical knowledge to be able to give medical support to a combat mission. There was never any question during the Korean Conflict relative to the clinical competence of medical and surgical specialists rushed to the combat zone at the outbreak of the war.

I repeat then that if there is any obligation on the part of the Armed Forces to provide clinical educational opportunities for Medical Department personnel then there is an equal obligation on the part of Medical Department personnel to become military medical men and women as well as clinical specialists.

The high standards of medical education available in the medical schools of this country are unquestioned; yet for all their high standards, including their "MENDed" curricula they cannot, and in fact need not, cover the military medical requirements of the three Armed Forces. That is the job of those of us in uniform. We of the various Medical Services must constantly adapt our education and training to new and rapidly changing methods of waging war. At the same time we must always remember that many of the diseases that crippled armies in the past are but lightly dormant, ever ready to kill and maim the minute they are unrestrained by the enforcement of proper control measures. If we recognize changing patterns in military medicine, we must also remember that there is a continuing sameness in the background of preventive medicine. New speeds, altitudes, deployment, munitions, fuels, weapons and instruments of warfare present new hazards; yet, basic environmental medicine remains the same, and man's physiology hasn't changed in several thousand years.

Maintaining interest in military medicine during peacetime is difficult. It is difficult to sell to those who approve spaces and funds and difficult to sell to those who should have the training. The man responsible for developing a strong military medical service must sell both ways.

Years ago I was amused when a friend stated that he wasn't going to attend a certain party because the last time he attended a party to which he had not been invited he didn't have a good time. In the past, military medicine has too often found itself in such an unhappy position, a poor relation not invited into the inner circles of the family. It has always been expected, however, that we were welcome to come in after the party and help pick up the pieces.

I am glad to state that today as never before medicine has been invited to the party—the military planning party. We of the various medical services are wanted and expected to be present. Modern weapons may tax a man's physiology and his mind as much or more than his skill, brawn or marksmanship. However, we must develop a productive imagination, a knowledge of military problems, and sound scientific solutions if we are

to continue to merit an invitation.

Too often in the past our tacticians and engineers have created weapon systems and munitions with little thought given to man's ability to live with them or his capacity to operate hem. If there is to be a minimum of difficulty in the coordinated effort of modern combat teams, whether they be on the land, on or under the sea, or in the air—if there is to be a minimum of failure in munitions and weapon employment, then it is up to us of the military medical services to become active partners in planning activities.

Health specialists know more about human limitations and the dangers men encounter in hostile environments than anyone else; they know more of the ingredients of human failure than others differently schooled; and they know more of the support men need to survive the dangers of combat.

Therefore, we should never stand aside waiting to be called if we are to fully recognize that our job is to "keep 'em flying" or "to keep as many men at as many guns for as many days as possible." Our military medical studies must include the characteristics of weapons and munitions, their tactical employment, and the environmental factors incident thereto, as well as medical and health sciences. Medical education for national defense must be available in medical schools—it must be included in organized medical activities at community levels—but responsibilities for advanced and postgraduate MEND courses rest squarely within our military medical departments.

General Lull: When I came into the military service there were two major generals of the line in the Army: the Chief of Staff and the Adjutant General; they were both physicians, General Wood and General Ainsworth.

Going back into history, when the War of 1812 broke out Madison was President. He had as his Secretary of War a physician, Houston. There were two major generals of the line in the Army, the senior one was a physician; there were nine brigadier generals of the line and the senior one was a physician.

So we see that in our military setting in the past we have had medical men play a very important role in the line of the Army as well as in purely professional work as physicians.

The next speaker is The Surgeon General of the Public Health Service, Dr. Leroy E. Burney.

SURGEON GENERAL LEROY E. BURNEY, U. S. PUBLIC HEALTH SERVICE

THE year 1958 has been one of decisive action in national civil defense and mobilization—that is, all the civilian activities undertaken for preparedness, survival, and recovery in time of war or emergency. Actions taken by the President indicate the high priority he places on the role of the Federal agencies in this area. His Reorganization Plan No. 1 of 1958 combines the Federal Civil Defense Administration and the Office of Defense Mobilization into the Office of Civil and Defense Mobilization; central direction resides in his own Executive Office and specific civil defense responsibilities will be delegated to various Federal agencies with policy determinations and coordination by OCDM, under Governor Hoegh. A new national plan for civil defense has been developed, spelling out principles and general strategy. In sum, the entire civil defense and mobilization effort will be stepped up and given the kind of emphasis called for by these troubled times.

A basic concept of this plan is that civil defense functions should be planned and carried out by the Federal agencies best equipped to deal with them. OCDM will provide policy direction and coordination. The Federal agencies will be responsible for program content and operations.

In line with this policy, Governor Hoegh, Director of OCDM, has indicated that the responsibility for civilian health and medical care will be delegated to the Public Health

Service. The actual delegation of authority has not yet been made, and I cannot, therefore, describe it to you in detail. In general, however, we expect that it will include the following types of responsibilities:

1. Overall planning and guidance of emergency health and medical services;
2. Development of national medical casualty and preventive health services;
3. Development of a national emergency water supply plan;
4. Training of emergency health and medical personnel;
5. Conduct of research in medical and public health emergency measures; and
6. Continuous evaluation of civilian health and medical resources and requirements.

These broad responsibilities, of course, will encompass such specific areas as radiation surveillance, and protection of the civilian population against biological and chemical warfare agents.

In effect, therefore, the Public Health Service Service will plan and direct the health and medical components of civil defense and mobilization at the national level. To do this, we must—and in fact are now—developing plans that will make all-out demands upon all of the Nation's health resources, both governmental and non-governmental. The responsibility for casualty care and medical care in civilian areas depleted of medical personnel in time of war is a tremendous one. It is the hard core of civilian health defense.

Two other important developments round out the story of this Nation's new look at civil defense in 1958.

The first is the enactment of Public Law 606, 85th Congress, amending the Federal Civil Defense Act of 1950. Among other things, this amendment for the first time authorizes contributions to the States for the administration of civil defense services.

The second accomplishment is the issuance by OCDM of the National Plan for Civil Defense and Defense Mobilization. Recently issued, this Plan is the basic document of civil defense. It sets forth mission of each level of government, and of the individual citizen. The Public Health Service will have primary responsibility for developing the annexes on: the National Medical and Health Plan, National Water Plan, and the National Biological and Chemical Warfare Defense Plan.

We shall, of course, work closely with the States. We expect to rely on established relationships and to develop new ones. As in more familiar programs, the key to an effective civil defense program is a strong local-State-Federal partnership, backed up by the participation of professional and voluntary groups.

In particular, we plan to centralize our civil defense activities in a new division in our Bureau of State Services. This division will serve as a focal point for civil defense planning and operations.

In addition, I plan to invite a group of leaders to serve as an advisory committee on health and medical services for civil defense. National leaders in medicine, public health, civil defense, and public affairs will be asked to recommend courses of action for the Public Health Service and cooperating organizations. We expect that many divisions and facilities in the Service will participate in civil defense operations which are geared to their normal programs.

Civilian health and medical defense, however, calls for something more than intensifying our present programs. It requires new organizational relationships and cooperation in a literal sense—that is, operating together. This must begin, I believe, with advance joint planning among the Federal medical services and the national professional organizations.

Obviously, medical care will have to be provided for casualties. But what measures will be necessary to take care of illnesses when the supply of physicians is severely depleted? When there is an acute, often prolonged, shortage of medical and sanitation supplies? When medical facilities are damaged or greatly overcrowded? How can we handle the problems growing out a limited food supply?

These and many other questions must be

answered. But first, there is the vital matter of personnel and training. Emergency planning calls for a Nation-wide reservoir of professional health manpower trained in civil defense knowledge and skills. We in the Public Health Service plan to work with universities, health agencies, and professional groups in increasing these skills. In this connection, we will work with the MEND program, which needs to be expanded both in amount and scope.

In the field of health requirements, the Public Health Service will evaluate the needs for essential survival items and develop programs designed to assure these supplies during emergencies, using stockpiling and other reserve build-up measures. We have under way a national inventory of survival-type medical items located at wholesale drug outlets, warehouses, hospitals, and retail drug stores. The information developed from this study, to be completed early next year, will point up anticipated shortages of essential items.

I have given a high priority to the Public Health Service's expected new responsibilities in civil defense. It is my great concern that the Service provide a steady stimulus to planning, organization, and action throughout the Nation in the months ahead. We, of course, can accomplish very little alone. I hope that we shall the counsel and help of our fellow-members in the Association of Military Surgeons. I am gratified by the action of several other major professional organizations, without whom no national emergency health and medical service can be developed. The American Medical Association and the American Hospital Association, for example, have strong civil defense committees, prepared to join in planning at the national level.

We in the Federal medical services must become more sensitive to the needs and we must share among ourselves and with the States in the development of civil defense competencies and the necessary foci of organization and action. Civil defense is an interlocking job that calls for great ingenuity, perseverance, and leadership. It is a challenge that we all must meet now, if we are to safeguard the Nation's future.

General Lull: The next speaker is the Chief Medical Director of the Veterans Administration, Dr. William S. Middleton.

DR. WILLIAM S. MIDDLETON, CHIEF MEDICAL DIRECTOR, VETERANS ADMINISTRATION

IN SOUND planning for a national emergency, all medical resources must be carefully assessed and assigned to their respective roles in an all-out effort for survival and victory. From this broad viewpoint the medical potential of the Veterans Administration affords a great medical resource which to this time has been unexplored and unexploited in any promulgated plan. Its chain of 171 hospitals is widely dispersed over the country. At least one station is found in every state and one in Puerto Rico. Fourteen of 17 domiciliaries are combined with hospitals as centers. The remaining three domiciliaries are independent units. Ninety-three Outpatient Clinics are maintained as separate establishments or as consolidated elements of regional offices and hospitals. The physical plants range from obsolescence (1868-1920) to the most modern construction. Their maintenance in general reflects high governmental standards. Notable exceptions may be cited where available appropriations have not kept pace with the thoughtfully conceived planning for upkeep, modernization and replacement; but a studied effort is afoot to meet this situation. Any design to utilize every available bed in a period of national emergency must perforce weigh carefully this potential of 128,000 rated capacity with a planned expansion to exceed 260,000 beds upon such a demand.

The skilled and unskilled personnel of the Department of Medicine and Surgery exceeds 130,000. Of this number, over 4,500 are full-time physicians and 2,500 resident

physicians. These medically qualified practitioners encompass all fields of specialization except pediatrics, obstetrics and gynecology. In addition, more than 14,000 nurses are engaged in the system. Full complements of all elements of the modern hospital and clinic teams in technical and non-technical areas round out the staff.

Before an assessment of the availability of medical and allied personnel from this source can be realistically made, a survey of military commitments is required. Obviously, it is improvident and bootless to plan upon the local utilization of key professional staff members (as physicians, dentists and nurses) who have stated assignments as Ready Reserve Officers. Their wartime posts have been fixed in the military planning. To attempt the delegation of any conflicting responsibility in the Civil Defense program to such individuals would invite misunderstanding and confusion. While the Standby Reserve Officers are in a different category from a planning viewpoint, the staff responsible for developing the civilian resources in a national emergency might properly consider this group also militarily committed at this time.

The Department of Medicine and Surgery maintains a roster of the military status of its personnel at the several echelons. Of thirty-eight staff physicians in key positions in the Central Office, 4 are in the Ready Reserve. One dental officer is similarly committed. Thirteen non-medical staff members over GS-14 are in the same category. The impact of this situation on the Department as a whole may be gathered from a one-time survey of personnel (Table 1). Numerically physicians (managers and other M.D.'s) head the list with 1,271 participants; but percentagewise dentists lead with 34 per cent. Twenty-eight per cent of the non-medical managers and assistant managers, 21 per cent of the full-time physicians and 4 per cent of the nurses are active in Reserve programs. The Reserve participation of staff members of the clinics and domiciliaries is much less than in the hospitals. Many circumstances enter into this differential, the most cogent of which is the affiliated status of many of the stations most active in this relation. The heaviest commitments of Veterans Administration staffs to these Reserve programs occur in the Deans' Committee hospitals associated with a medical school or university hospital which supports an active affiliated Reserve Hospital unit.

This situation imposes an added responsibility upon the Veterans Administration to anticipate the results of a call up of Reserve Officers upon the adequacy of its staffing. An arbitrary figure of 40 per cent reduction in the medical staff through Reserve withdrawals in a national emergency has been set as a critical limit; but it has many obvious weaknesses. Mere numbers do not assure functional adequacy. The removal of the lone pathologist or roentgenologist might cripple an otherwise complete staff. The loss of one or two physicians in a marginally manned hospital, still adhering to the theoretical limit of 40 per cent admissible decrease, could prove much more serious in a small than in a large institution.

By common consent another war would be a total conflict with primary targets and objectives other than the opposing armies.

TABLE 1

PERSONNEL OF VETERANS ADMINISTRATION SHOWING MILITARY COMMITMENT

	Managers		*Asst.*	*Other*	*Dentists*	*Nurses*	*Other*
	M.D.	*Lay*	*Mgrs.*	*M.D.'s*			
Total	119	33	147	5,903*	630	13,739	2,313
Ready Reserve	21	6	32	658	163	408	298
Standby Reserve	8	3	10	584	55	246	94

* Including residents.

The factory for the manufacture of an essential element of a guided missile or an intercontinental ballistic device could actually prove a more important target than an army in the field. Without entering into their relative importance the medical requirements for the support of the civilian population and industry could conceivably greatly exceed the military needs. In fact, the front line may be the safest area in another war! The devastating effect of atomic force on life and property has been demonstrated in the bombing of Hiroshima and Nagasaki. Every American should read *Hiroshima Diary*. From this record alone the appalling, awe-inspiring ravages of this new instrument of destruction should stay the hand of any aggressor. The thermonuclear forces of the H bomb would have a much greater potential for decimation and desolation. Added to the early regional effects of these agents are the dangers attendant upon fall-out at removed distances determined by the prevailing winds. If to these threats in total strife there should be added chemical and biological warfare the medical problems would be vastly extended.

Should global war develop, the Veterans Administration expects to play its part. In spite of recurrent importunities no definite plan for the utilization of its personnel and materiel has been announced. In each of the trial exercises of civil preparedness the agency has faithfully and intelligently discharged its mission. On these occasions and in numerous conferences the answer to the impelling question of the responsibility of the Veterans Administration in a national emergency has not been forthcoming from higher authorities. Clearly at the earliest period these resources, personnel and material would become a community asset—the largest cohesive medical system in the country. All applications for admissions, veteran and non-veteran, military and non-military, would receive equal consideration. In each exercise, the impact of the theoretic bombing upon the several areas was carefully assessed. With the basic assumption of primary and secondary targets an approximation of damage was derived. For planning purposes, partial and complete destruction, temporary and permanent denial of the utility of physical plants and the estimated casualties were projected.

At a glance the far-flung distribution of the stations of the Veterans Administration may be gained. Theoretically, in a given exercise, 58 of the hospitals in the system would be destroyed or rendered inoperable for varying periods of time. The beds would thereby be reduced to 176,894 in the remaining 113 hospitals. Of the professional staff, 3,684 physicians, 299 dentists and 6,763 nurses were listed as casualties. The corrected figures for the remaining staff must also reflect the staff members withdrawn to Reserve assignments, although the civilian needs might well determine the maintenance of the Standby Reserve officers at Veterans Administration stations in such an emergency. Under these simulated conditions the number of remaining staff members in the professional groups would be: physicians, 1,208; dentists, 126; nurses, 6,769.

Such reductions in personnel and physical plants would necessitate a complete realignment of functions and operations within the limitations imposed by the surviving staff and the functionally intact stations. After the immediate emergency the community responsibility of the Veterans Administration Department of Medicine and Surgery having been discharged, it is assumed but not written that the several plants and their staffs would revert to the agency.

Meanwhile an entirely different problem obtrudes itself. The major portion of medical education and training in the United States is conducted in the larger centers of population which in turn are most vulnerable to enemy attacks. In all conservative estimates fifty-five 'medical schools would be doomed. The loss of these schools would deny education to 21,379 young men and women now enrolled. The gravity of the situation would far exceed that which attended the blitz of World War II in London. British medical education was then seriously dislocated; but clinical teaching was maintained under very trying conditions in the remains

FIG. 1. DISTRIBUTION OF VETERANS ADMINISTRATION STATIONS.

of the shattered hospitals of London. Sir Francis Fraser, who was Director of the Emergency Medical Service during the war, states that only the pre-clinical departments moved to safer centers outside the metropolis (Table 2).

Since students at Charing Cross, St. George's and Westminster Medical Schools attended pre-clinical courses at King's College, they too were relocated at Bristol. Interestingly, although St. Mary's is close to Paddington Station, a common target, the dislocation was maintained only from October to December, 1939. While the clinical departments of these schools remained in London, the destruction of the older hospitals and the reservation of numerous beds in the center of London for war casualties led to the "upgrading" of hospitals at the periphery of the city and their extensive use for clinical teaching.

TABLE 2

RELOCATION OF MEDICAL SCHOOLS IN LONDON DURING WORLD WAR II

Medical School	*Relocation*
Guy's Hospital	Towbridge, Kent
King's College Hospital ...	Bristol
London Hospital	Cambridge
Middlesex Hospital	Leeds
Royal Free Hospital	Exeter
St. Bartholomew's Hospital .	Cambridge
St. Mary's Hospital	Manchester
St. Thomas' Hospital	Godalming, Surrey

In anticipation of a major all-out attack on the United States with the resultant destruction and dislocation of medical education facilities, thoughtful planning of substitute accommodations must be arranged. The relationships between the Deans' Committees of medical schools and the Veterans Administration hospitals have thrived over the past 12 years. In an atmosphere of mutual respect 72 Deans' Committees now afford guidance to the education and research programs of 85 Veterans Administration hospitals to the great advantage of the American veteran. These Committees have the added responsibility for the nomination of the full-time staff of the hospital to the manager. In his executive capacity the manager has the prerogative of veto which he rarely exercises, since potential differences are regularly resolved before issues arise. The training of residents in many divisions of medicine and surgery (2,500 in 21 specialties) is usually a mutual enterprise, since candidates are nominated to the manager by the Dean's Committee on the joint advice of the head of the involved department in the Medical School and the Chief of service in the Veterans Administration Hospital. The common interest is served by the active participation of faculty members as consulting and attending physicians.

In the relatively limited duration of World War II, the short-sighted denial of specialty training for restricted groups of recent graduates proved a boomerang. Within three years the Armed Forces and civilian medicine felt the serious pinch of the shortage of well trained specialists. Frantic remedial measures were instituted. The emergency created by high staff rulings necessitated short-cuts and other expedients that would not be condoned under normal conditions. The situations justified the means. As cited, the Veterans Administration Department of Medicine and Surgery through the Deans' Committees conducts the largest graduate program in medicine in the world. While a few independent residencies exist in the system, its collaborative, integrated and affiliated arrangements with medical schools and their hospitals insure a maximum of protection to the interests of the trainee in a sound foundation for specialized practice. Where applicable to the medical requirements of a national emergency, such programs should be carefully assessed and continued. One protective device is suggested. Participants in these programs should primarily be selected from the young medical officers who have seen active service with combat units for more than a year. Second priority might be accorded to a minority of recent graduates denied the privilege of military service for physical causes.

The educational or academic atmosphere in the Department of Medicine and Surgery is further strengthened by the presence of almost 5,000 clinical clerks on the wards of these hospitals in their junior or senior years. Should total warfare strike this country and destruction threaten the very bulwarks of medical education, plans to meet every exigency of the situation must be evolved. If we again study the map, certain situations emerge. Referring to the assumption that 55 medical schools might either be demolished or rendered unfit for use for a considerable period, tentative plans to relocate their functions in existing institutions of learning and hospitals should be formulated with a certain measure of flexibility. The wide dispersion of Veterans Administration hospitals immediately suggests itself as a logical area of exploration for the alternative relocation of certain elements of medical schools. The clinical and laboratory facilities of the hospitals of this system are admirably adapted to this emergency function. Indeed in many instances they have already served this function at undergraduate as well as graduate levels in a peacetime setting. With the added community responsibility of the emergency, the limitations imposed by the age and major sex of the veteran patients would be eliminated in the accommodation of all groups. The dislocation of the medical faculties from bombed areas and their reassignment to Veterans Administration hospitals would insure a superior staffing. With forethought and design, dentistry, nursing and the technical courses in support of medicine could be incorporated in this general pattern. While this plan would be primarily directed to clinical instruction with the thought that preclinical work in the basic science be developed in nearby colleges or secondary schools, local circumstances might dictate the evolution of the entire undergraduate medical curriculum in certain Veterans Administration hospitals.

So cogent have been the arguments for such an arrangement that a master plan for its implementation has been developed on a regional and nationwide basis by the Veterans Administration Department of Medicine and Surgery. Local piecemeal arrangements for the relocation of medical schools are foreordained to failure through the overlapping and conflict of interests. The staff study by the Veterans Administration Department of Medicine and Surgery assigns 68 hospitals as primary relocation sites with 27 supplementary or alternate locations. In certain instances the recommended facilities are manifestly inadequate. In a few areas they are excessive to the regional requirements. While this plan suggests certain specific sites for the accommodation of the several medical schools, it is not inflexible. Much staff work will be required to reconcile the details of supply and demand. Now is the time of decision. Let us move promptly that we may plan wisely.

CLOSING REMARKS

General Lull: Are there any questions from the floor? . . .

There apparently are no questions.

I want to read to you a paragraph written about thirty years ago by Colonel Percy Ashburn of the Army Medical Corps when he was commenting about medical officers and the selection of medical officers. He said: "In the same environment the present generation of medical officers would differ little from that of the 70's. The old would be conservative, cautious, and perhaps proselyzed; the young heedless and radical in the same way. History never repeats itself exactly because the world moves. Each generation has to live its own life in its own time and in its own environment; to start from its own location in time and space, and we are partly what we are because our ancestors were what they were and partly because our times and environment are not what theirs were."

The Medicare Program—Progress, Problems, Principles*

By

BRIGADIER GENERAL FLOYD L. WERGELAND, MC, *U. S. Army*†

THIS is an unusually distinguished audience, and I am mindful of the honor that was bestowed on me when I was invited to talk to you this morning.

I have headed the Office for Dependents' Medical Care for only a few months. Looking back, those months seem like years—hard, exciting years, in which every moment has been filled with rewarding experiences. A few months ago the words "Medicare Program" were little more than a phrase to me; today that phrase has almost become a clause.

So, mindful as I am of this honor, there is within me this morning another emotion that almost completely overwhelms any personal gratification I may have—a feeling of gratitude. I am deeply and sincerely grateful for having the opportunity to tell you about this program that has come to mean so much to me.

To do justice to my theme, I should like to talk to you for several hours—not in one session, I hasten to add. Perhaps in those sessions I could convey to you that minimum of information I should like you to have. One session on the accomplishments of the Program; one on our current problems and our efforts to solve them; and one on the principles upon which the Program is founded—the philosophy of the Program.

And all the time I have is a half hour or so! Under the circumstances, I will try to cram the three hours I wish I had into these thirty minutes. Bear with me. If what I have to say is heavy going, credit it to the need to cover so much ground in so little time.

Most of you have a nodding acquaintance with the Medicare Program. A few of you know it well, and possibly a few of you are wholly unfamiliar with it. To refresh the memories of those who may have forgotten how it came into being, and to inform those who never knew, I think it is advisable to give you a quick briefing about some historical facts.

From the beginning of our country, military doctors have given at least some care to the dependents of men in our armed forces, even though the law made no specific provision for such care. It was simply accepted as a responsibility that was implicit in the over-all duties of military doctors. With the passage of time, this assumed responsibility became more regularized, and to a considerable but undefined extent became a normal part of the practice of military medicine. Over the years, the Congress recognized the need for such care, and in a series of laws, made provisions for it on a piecemeal basis, but in a fashion that was partly tacit, partly explicit, and not uniform for all branches of the Service.

Prior to World War II, our nation maintained small armed forces, operating on the assumption and principle that civilians could be quickly trained in sufficient numbers to provide an adequate supply of manpower if and when hostilities were imminent. These small forces were concentrated for the most part where there were adequate medical facilities and personnel. This concentration of military personnel made it possible to give dependents the medical care they needed.

Both militarily and economically this made sense, and still does. We must maintain a portion of our military medical capacity on a standby basis as part of our military armamentarium. The margin of medical capacity between current military requirements and standby needs should be put to use. Where there are dependents who need care, this marginal capacity should be used to provide that care. This policy has a triple advantage; it provides dependents with needed care; it

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maintains the skills of doctors by providing continuing clinical experience with types of care not seen in normal military medical practice and helps in training doctors; and it produces an economic return for tax dollars already invested in hospital plant and staff.

Since World War II, it has been necessary to maintain large armed forces and, for adequate defense, we have had to maintain many widely dispersed Army, Navy, Marine and Air Force units located at a considerable distance from the large, well-equipped posts, camps and stations, where medical facilities were available. I refer to such installations as Nike sites, weather observation units, and the like. Also, the lack of adequate housing at or near the larger military installations, and the need for maintaining forces overseas, made it impossible for many married men in the forces to have their families near them. All of these forces working together produced a condition in which an estimated 40% of all dependents were not living with their military sponsors, and did not have access to military medical facilities.

This undesirable condition had a bad effect on the morale of the men.

In 1953, the Moulton Committee, a special committee which had been appointed to study the matter, recommended that there be established a system for providing medical-hospital care for all dependents, regardless of where they lived, as a morale-improvement program.

This recommendation was studied and plans to implement it were repeatedly drafted, studied and re-drafted, until, at long last, on 6 June 1956 the Dependents' Medical Care Act was passed, to become effective 7 December 1956. For the first time, all dependents were entitled to complete medical care as a legal right.

In brief, the Act provided that civilian doctors and private hospitals would be used to supplement existing service facilities and staffs in providing care for spouses and children of men in the uniformed services. Three million dependents of men in the Army, Navy, Marine Corps, Air Force, Coast Guard, Public Health Service, and the Coast and Geodetic Survey are the potential beneficiaries of the Act.

Nearly two years of operation show that the Program established under the terms of the Act is successful. Here are some figures that prove it.

During the calendar year 1956, there were 407,000 admissions of dependents of service personnel to uniformed services facilities. In calendar year 1957, there were 339,000 admissions of dependents to service facilities, a decrease of 68,000 from the 1956 total. But, during the first full year of Medicare operation, December 1956 through December 1957, 328,100 dependents were admitted to civilian hospitals; added to the 339,000 dependents admitted to service facilities in the same year, we have a total of 667,000 admissions, a net gain of 260,000 admissions or approximately *39% more* than the number cared for in service faciilities in 1956. This single figure is indisputable proof of success.

We have other indications that the Program has been successful.

The men in uniform like the Program. In a recent study conducted by the Army in a number of posts, Medicare was named as an important reason for soldiers re-enlisting and making the Army their career. Their main criticism of the Program seems to be that they want it extended to cover dental care! Evidently the Program is a career incentive and has improved morale.

The patients like the Program. We send out a questionnaire every month to a considerable number of Medicare users to help us determine how effectively the Program is operating. Month after month, more than 99% of the returned questionnaires report that the users are satisfied with the care they receive.

Finally, judging from our correspondence, and from conversations with many doctors all over the country, I am sure that the overwhelming *majority of doctors like the Program.*

Up to this time we have paid physicians and hospital bills for more than 600,000 hospital admissions. The Office for Dependents'

Medical Care has not paid these bills directly. Actual payment is handled by fifty-five organizations—Medical Societies, Blue Shield-Blue Cross plans, and private insurance companies, who do this work as fiscal administrators for the Office for Dependents' Medical Care under non-profit contracts. They pay the bills, send them along to the Office For Dependents' Medical Care for checking, and are then reimbursed by Walter Reed Army Medical Center, Finance and Accounts Branch.

The first twenty-three months of operation of the Medicare Program were filled with administrative problems. When it began, the Program was something new, without precedent or guide lines that could be followed. Within the first few months of operation, there were nine changes in the Joint Directive, the basic administrative regulations for the Program. Each of these changes made it necessary to amend the contracts with the fiscal administrators, required notification of 145,000 practicing physicians, of every hospital in the United States, Hawaii and Puerto Rico, and all the personnel in the uniformed services, and through them, their 3,000,000 dependents.

A few of the changes in the Joint Directive were necessary to clear up minor procedural difficulties that always beset new enterprises. Most of them had their origin in the efforts to provide the greatest amount of care with the least difficulty for everyone concerned, and at the lowest cost consistent with equitable compensation for the physicians providing the care.

During its first fiscal year of operation, there was no fixed appropriation for the Medicare Program. Since there was no precedent for it, there was no good method for estimating probable costs; accordingly, the Congress directed that the services absorb the costs of the first year's operation out of their over-all appropriations.

The first budget request for fiscal year 1958—$63,600,000—was largely an estimate because there was little data available that could be used as the basis of a firm projection of probable costs.

Late in the calendar year 1957, in accordance with the usual timing of the preparation of Government budgets, the Office for Dependents' Medical Care was directed to prepare an estimated budget for submission to the Congress in the Spring of 1958, covering fiscal year 1959. From available data, it appeared that the Program would stabilize at a cost averaging about $6,000,000 a month —$72,000,000 a year—and this is the amount that was submitted in the budget request for fiscal year 1959.

Late in the Spring of 1958, monthly expenditures began edging upward. It appeared that more and more dependents were using the Program, and that more and more delayed billings were being received.

This matter of delayed billings warrants explanation. From the start of the Program, it was anticipated that there would be a gap in time between the date on which a patient received care and the date on which the bill for this care was submitted to and processed by our fiscal administrators. No one knew what this time-lag would be. Ultimately, experience showed that it was very much longer than anyone had estimated. We now know that it takes upwards of ninety days to receive less than 60% of the claims for care provided in a given month. Further, it takes more than year and one-half before we receive substantially all of the claims for care provided in a given month. Even today we are still getting a few claims for care given in December 1956, the first month of Program operation.

This lag in the submission of claims is crucially important to the Office for Dependents' Medical Care because it is from these claims that we obtain our statistical and financial experience data.

Let me explain this difficulty more fully. As the Program operates, we stand ready to pay claims as they are received. If they are in order—on the approved form, DA Form 1863—for eligible dependents and for authorized care—if they are within the negotiated schedule of allowances—and so on—we must pay them.

We are never in a position to know how

many people are in hospitals at a given time. It is when the claims are received, months later, that we learn the facts. This is a situation which we can do nothing about. All of our information is inherently very much ex post facto.

But the percentage formulas that describe the pattern of billings are what we know *today*. A year ago, when preliminary budget figures were being prepared, we did not know them because we did not have sufficient data to permit valid analyses, and fully reliable projected trends. While the budget request was being considered by the Congress, it became evident that the $72,000,000 requested was probably not enough; monthly billings had begun to creep up toward $7,000,000. This fact was brought to the attention of the Committee considering the budget, but these possible higher costs per month were still not firm enough to justify a larger appropriation.

During these budget hearings, the Committee expressed concern over the fact that the dependent patient load in service hospitals decreased after the Medicare Program commenced operations. It was evident that substantial numbers of dependents, particularly maternity cases, were using civilian hospitals under the Medicare Program when facilities and staff were available for them in service hospitals. As I told you earlier, the decrease in calendar year 1957 was approximately 68,000 admissions.

Accordingly, the House Committee decided to cut $12,000,000 from the budget request of $72,000,000 with the intent of restricting the free choice of dependents and requiring them to use service hospitals when the care that was needed could be provided by service hospitals. The House of Representatives voted that Program expenditures for fiscal year 1959 be restricted to $60,000,000.

The Committee on Appropriations of the Senate agreed with the House vote in recommending to the Senate as a whole an appropriation of $60,000,000. When the appropriation bill came before the Senate as a whole for a vote, an amendment from the floor raised the $60,000,000 to the originally requested amount of $72,000,000. Eventually both the Senate and the House of Representatives agreed on the larger amount.

However, it was not until late in August 1958 that the two Houses completed their work and the appropriation of $72,000,000 for fiscal year 1959 became law.

Meanwhile, Program *expenditures* continued to increase—$6,300,000 in August, $8,400,000 in September, $9,200,000 in October . . . with the ceiling still unknown. I should like to point out that the Program continued to operate at an unrestricted level of activity in July and August, 1958, pending a determination of the fiscal year 1959 budget by the Congress. When the appropriation was fixed at $72,000,000, it was clear that restrictive regulations to reduce the Program to that annual cost could not be formulated to become effective before 1 October 1958 at the earliest. This meant, in effect, that the first quarter of the fiscal year's operations were at the usual level, making it necessary to reduce the program drastically during the last nine months of the fiscal year 1959.

Confronted with this complicated situation, the Secretary of Defense appointed a special Interdepartmental Committee to study these problems and devise ways of solving them.

During its study, the committee had to keep in mind the detailed provisions of the law, the expressed desires of Congress concerning the optimum use of service facilities, and an extremely difficult financial situation. In addition, it was necessary to keep in mind the overriding humanitarian requirement that the medical needs of dependents should be met so far as humanly possible under these conditions.

During its study, the committee had available for consideration a large amount of detailed information that had been developed during the late spring and early summer months. The billing pattern had been analyzed, and study of the claims had revealed additional significant information that had a bearing on our costs. Some of this data could be partly or wholly measured; some could not. We discovered that the proportion of married men in the services is increasing, so that concurrently with a substantial decrease

in troop strength, there was a substantial increase in the number of dependent wives and children. We discovered that the pattern of medical care was changing, and that OB-GYN cases, as a percentage of all admissions, were steadily increasing from roughly 50% early in the program to possibly as high as 70% at present. On the average, OB-GYN cases have cost more than medical or surgical cases. In addition, as you all know, hospital costs continue to rise. And of all of these things we learned—and are still learning—none was predicted, because none was predictable. We learned these things after the claims came in.

After studying this array of problems, the committee developed the restrictions on the Medicare Program that became effective on 1 October 1958.

These restrictions fall into two categories: (1) those designed to funnel dependents into service facilities up to the point where they are used to the optimum extent, and (2) those designed to "slim down" or "cut back" the Medicare Program so that costs would presumably be brought into line with available funds.

The procedure developed to achieve the first of these objectives was made necessary by the concern expressed by members of Congress over the fact that some dependents were utilizing the Medicare Program and obtaining care from civilian sources when service facilities were available to provide the needed care. As mentioned earlier, the service facilities must be maintained on a standby basis as part of our defense organization and should obviously be used to the optimum extent. Indisputably, this is sound financial policy.

However, translating this wise policy into a workable administrative process is a very difficult matter. Consider for a moment this hypothetical, yet typical case. Imagine a service hospital with unused standby facilities able to handle, let us say, an average load of twenty additional patients a day. It is located in an area with a large dependent population. We have no way of knowing precisely how many dependents will need care, when they will need that care, or what kind of care they will need, at that place, at a given time. Imagine further that the local dependent population will, on an average day, require fifty beds. It is easy to say that the twenty beds in the service facility should first be filled, and that the thirty additional beds that are needed should be provided from civilian sources. But how can this be done? The answer is evident—it will be necessary to have *all* persons needing care check with the Service hospital to see if care can be provided there before any of them may be allowed to receive care from civilian sources.

In principle, the only thing that can be done in such a situation is to establish a formal clearance procedure, based on documentation. The Medicare Permit system that went into effect on 1 October 1958 is the embodiment of the clearance principle. Most of you have some familiarity with the system, but, because of its importance as the basic control mechanism for regulating the Medicare Program, I think it would be well for me to outline the system and explain how it operates.

Remember, first, that only dependents who reside with the sponsor require a Permit. Remember, second, that no Permit is necessary when: (1) the dependent requiring care does not reside with the sponsor, (2) the dependent requiring care generally resides with the sponsor but is currently away on a trip, and (3) the care required is for a bona fide acute emergency, and the physician so certifies. Remember, finally, that this Permit, even when issued, is not an automatic blanket authorization for care from civilian sources. The Permit was designed for immediate use and for the care specifically authorized from civilian sources under the new restricted Medicare Program, effective 1 October 1958. These conditions are stated on the Medicare Permit (DA Form 1251) itself. Because many permits are issued by non-medical men, especially in cases where the Permit is issued automatically by commanding officers in charge of installations where no service medical facilities are available, and to prevent differences of opinion as to diagnoses

between service and civilian physicians, the Permits do not necessarily specify the type of care for which they are issued. The civilian physicians, following the regulations provided to them, must determine if the care needed by a given patient has been defined as eligible for payment by the Office for Dependents' Medical Care.

This restricted range of care eligible for payment was reluctantly imposed because it did not appear that the Medicare Permit system could effect savings great enough to enable the Medicare Program to finance an unrestricted program through the balance of the fiscal year 1959.

This is not an appropriate place or time to go into detail concerning these reductions in the range of care eligible for payment. Briefly, however, the reductions were achieved in several ways: surgical cases eligible for payment were restricted to (1) bona fide surgical emergencies, (2) acute surgical conditions, which, while requiring prompt treatment, are not considered to be emergencies under the program, and (3) injuries requiring hospitalization.

Surgical conditions *no longer eligible for payment* are those conditions which, in the opinion of cognizant medical authority, can be planned, subsequently scheduled and effectively treated at a later date without physical detriment to the patient.

For medical cases, the regulations remain unchanged—acute medical conditions requiring treatment during hospitalization may be considered payable at Government expense.

Likewise, regulations governing dental care remain unchanged, providing, however, that adjunctive dental care is now payable only when it is an integral and necessary part of surgical or medical care *now* authorized.

The new regulations for maternity care are briefly as follows:

Maternity cases (residing with sponsor) under the care of a civilian physician on or before 1 October 1958, could be continued by that physician provided the patient had reached the second trimester of pregnancy on or before that date. In these cases, a statement by the attending physician on the claim DA Form 1863 (or attachment thereto) will be submitted by the physician to the effect that the patient was under his care on or before 1 October 1958, and that her pregnancy had reached the second trimester on or before that date. This statement will suffice to authorize this care for payment without a Permit, *and will apply only to maternity cases where the wife resides with her sponsor.*

Maternity cases *separated from the sponsor* remain wholly unrestricted as to freedom of choice between service facilities and civilian sources of care.

Finally, cases falling within the following categories are no longer eligible for care:

Treatment of fractures, dislocations, lacerations and other wounds on an outpatient basis.

Termination visits. This refers to payment of a referring physician who terminates his care prior to, or upon hospitalization of, the patient.

Outpatient pre- and post-surgical tests and procedures.

Neonatal visits. Two well-baby visits had been permitted during the first 60 days after delivery.

Treatment of acute emotional disorders.

This completes my résumé of actions taken to reduce costs and to assure optimum utilization of uniformed services medical facilities.

Briefly, the types of medical care available from civilian sources have now been restricted; to the best of their existing capabilities, the respective service hospitals will have to assume the load. It is unlikely that they can take up the entire load, even though they operate at optimum capacity. This means that some dependents located near service hospitals may elect to pay for some kinds of care out of their own pockets rather than wait for care until a later date. It also means that some dependents not having convenient access to a service hospital may well choose to pay for such care themselves. These circumstances will certainly tend to force some dependents to pay for their own care if they can possibly do so. These facts,

however undesirable, are the results of decisions that were believed to be less undesirable than the alternatives that were available to the Secretary of Defense. They were decisions that were made reluctantly; we are aware of the resulting problems, and we are trying to find reasonable and workable solutions for them.

The service hospitals face a new task, because in addition to an increased outpatient and inpatient load, they will need to screen all applicants for care and issue Medicare Permits when appropriate. I want to caution those of you who are directly concerned with the Medicare Permit system about one thing. The system was designed to be used to authorize eligible dependents to seek care from civilian sources, providing that the specific care sought is authorized under the Program. It was *not* intended to serve as a *barrier* to care.

Obviously it will take some time before the kinks are ironed out of the revised procedures and Program. We hope what we have done will achieve the ends we had in mind, but we do not know how it will work out in practice. Only time will tell.

It is our ultimate goal and intention to achieve the purpose of the law, and give the widest possible range of care. Service medical facilities and civilian medical sources must be coordinated as complementary parts of a single Program directed toward that goal. The Congress will decide the appropriation annually; the Secretary of Defense will then adjust the Medicare Program from civilian sources to the funds made available.

Since the Program began in December 1956, we have concentrated on developing the mechanisms of the civilian side of the Program. Civilian physicians and hospitals have given magnificent cooperation. Now we are turning to the task of integrating the civilian program and the service program into a smoothly operating, stabilized program providing an adequate range of needed medical care for eligible dependents that will be a permanent feature of service life. To reach that goal will require hard work, patience, and cooperation between civilian and service physicians and hospitals based upon a sympathetic understanding of their mutual and respective problems.

We are physicians—and we are military men. I want to convey to you my deep conviction that the Medicare Program presents us with a unique opportunity to serve both mankind and our country.

The Medicare Program has been described as a morale program. If it is to be truly and fully effective as a morale program, we must *not* think of it as something apart from care given to the men themselves. Truly, it is care for their wives and children, but in a very real sense, it *is* care given to the men.

It is care of the *whole* man, including care for those ". . . worries that are diseases without disease, that become disease"—those psychosomatic—those spiritual ills—that make men wretched, uneasy and physically ill—that undermine the effectiveness of men as part of our national defense, dedicated men though they are.

We can give care to the whole man in this complete sense only if we know that all necessary care is available, and if we convince every man in uniform that the essential professional care given to his dependents, whether provided from service or civilian sources, is the best anywhere. When we have done that, we will know that the Program is doing the job that the members of Congress intended it to do when they passed the Medicare Act—that is, of building and maintaining the morale of service personnel. In this atomic age it will take every dynamic cooperative effort to achieve an offensive fighting spirit by each individual man in uniform.

THE 1958 WELLCOME PRIZE ESSAY

Vascular Surgery in the Armed Forces

By

LIEUTENANT COLONEL CARL W. HUGHES, MC, *U. S. Army**

(With 14 illustrations)

IN ANY presentation of advances made in blood vessel surgery, one might be expected to start with the acute vascular injury and follow the natural progress of events. Since the sequence of events described herein did not follow such an orderly fashion, these advances are recorded in their chronological order of occurrence.

Information relative to vascular injuries incurred in World War I is far from complete. While both the American and German literature contain some of the desired information, the data most often referred to are those in the British literature recorded by Makins.[1] During World War II a concentrated effort was made to study vascular injuries and following the war the findings were published in various journals, and more recently as a bound volume by the Medical Department of the United States Army as part of the History of World War II.[2]

As a result of the experience in vascular surgery during World War II and the advances being made elsewhere, military interest continued in that field to the extent that research in vascular surgery was begun within military medical installations. In 1949 a program was instituted at Walter Reed Army Hospital for the study of blood vessel repair and replacement using fresh and preserved artery homografts and fresh venous autografts.[3] Associated with this program was a study of muscle ischemia to determine the maximum lag time from vessel injury to muscle irreversibility.[4] These experimental studies necessitated a method of blood vessel storage. A modification of the Gross method of storing vessels in nutrient solution[5] was adopted and out of this grew the blood vessel bank for the hospital.[6]

ARTERIOVENOUS FISTULAS AND FALSE ANEURYSMS

The research program at Walter Reed Army Hospital proved timely since the Korean Conflict was forced upon the United States the following summer. Following the World War II practice of establishing specialty treatment centers, the Surgeon General designated Walter Reed Army Hospital as the vascular specialty center. As a result of this decision, the hospital received, early in the Korean War, over 200 patients with traumatic arteriovenous fistulas and aneurysms, in addition to a number of patients in whom major vessels had been ligated.

Unfortunately, the Korean situation arose with the suddenness of the attack on Pearl Harbor. With the early tide of war turned against us there was neither time nor trained personnel to attempt blood vessel repair. In the obvious cases, the damaged blood vessel was ligated. Fortunately, however, a number of patients with blood vessels injuries developed pulsating hematomas which were treated conservatively and evacuated to Tokyo Army Hospital. There within the first 15 months of the war, 59 patients required emergency surgery for secondary hemorrhage from these lesions.[7] The remainder of the patients with uncomplicated pulsating hematomas developed false aneurysms and

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arteriovenous fistulas and were returned to specialty centers in the United States for study and definitive surgery.

Etiology and Pathogenesis

With the increased use of fragmenting missiles, it was not uncommon to see a patient with dozens of wounds scattered over his body (Fig. 1). Approximately 85 per cent of the blood vessel injuries resulted from missile fragments, while the remainder resulted from bullets.[8] The incidence of arterial wounds among American battle casualties in World War II has been reported as 1.4 per cent.[2] It is not surprising that with the increase in the use of fragmenting missiles, the incidence of arterial wounds in Korea increased to 2.4 per cent.[9]

Following a penetrating injury to a blood vessel, one of several changes may take place. If the artery is completely severed, the ends retract and contract. The hemorrhage may stop spontaneously or be controlled by compression or tourniquet until the vessel can be ligated or repaired. Without such treatment, secondary hemorrhage is likely to occur. When a vessel is partially severed, only the cut portion of the vessel wall retracts, holding the wound open allowing profuse hemorrhage. If the soft tissue wound is large, the hemorrhage becomes evident externally. If the soft tissue wound is small, less blood is lost externally, while the remainder is trapped by muscle, fascial, and skin planes forming a pulsating hematoma. The blood in contact with the surrounding structures tends to clot, becomes laminated and organized. The blood in the center of of the hematoma remains fluid and is free to flow in and out of the tear in the arterial wall. If left undisturbed by surgery, infection, expansion or leakage, the pulsating hematoma develops into a false aneurysm (Figs. 2 and 3). Organization of the wall of the hematoma develops a fibrous tissue sac which becomes lined with a glistening layer of intima-like cells. There have been different opinions expressed as to whether the lining originates from the intima of the parent vessels with which it is continuous, from cells of the blood stream, or from flattening of the innermost layers of fibroblasts infiltrating the sac. It is probable that the latter theory is true, since such sacs have been noted in various stages of their development to have patchy areas of lining, while other areas were still bare. These false aneurysms may assume almost any shape depending on the contour of the supporting structures and the wound. Other vital structures, such as the accom-

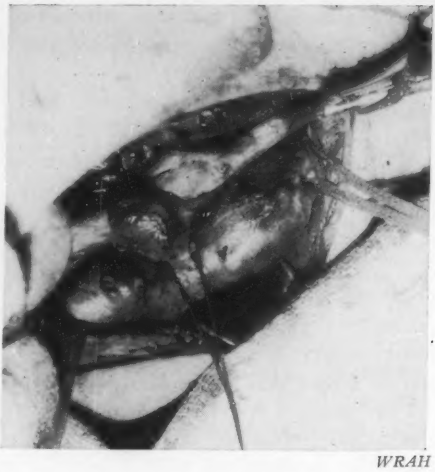
Fig. 1. In the presence of multiple soft tissue wounds, vascular injury is a frequent occurrence.

Armed Forces Inst. of Path.

Fig. 2. A false aneurysm of the popliteal space is shown before surgery. Because of the tight popliteal fascia, leakage and expansion of the aneurysm can result in early nerve damage and ischemia to the leg.

Armed Forces Inst. of Path.

FIG. 3. The aneurysm in Fig. 2 is shown at surgery prior to excision of the lesion and anastomosis of the artery.



WRAH

FIG. 5. An arteriovenous fistula is shown prior to excision of the lesion and repair of the vessels. Here the heavy silk cord is shown looped about the fistulous tract between the common carotid artery and internal jugular vein.

panying vein and nerves, are commonly incorporated into the wall of the false sac.

Under similar circumstances, when the vein is injured in addition to the artery, a pulsating hemotoma also may be formed (Fig. 4), but the blood which escapes under high pressure from the arterial injury seeks the path of least resistance and enters the vein to form an arteriovenous fistula (Fig. 5). Such a fistula can develop almost instantaneously following injury to both vessels. Arteriovenous fistulas are more prone to develop where the artery and vein are enclosed by a common sheath. The simplest form of vascular fistula is a simple opening or tract between the two vessels. Such simplicity is seldom seen. More commonly a false sac makes up a part of the lesion. As in the development of the false aneurysm, the sac may assume odd shapes, may be between the artery and vein, attached to either or may be multiple. Where two concomitant veins accompany the artery, all three vessels may be involved. Because of the presence of the sacs in these lesions, some apply the name, arteriovenous aneurysm. As the false sacs become organized with fibrous tissue and lined, the artery proximal to the fistula becomes dilated while the artery distal to the fistula becomes smaller than normal. The vein near the fistula becomes enlarged and thickened. It is in these patients with fistulas that the danger of Streptococcus viridans bacteremia exists.

WRAH

FIG. 4. The pulsating hematoma shown here resulted from injuries to the common femoral artery and vein which created an arteriovenous fistula.

Sites and Regional Frequency

Two hundred and two patients with 215 traumatic arteriovenous fistulas and aneurysms were treated at Walter Reed Army Hospital during and immediately after the Korean War.[10] Most of these lesions resulted from injuries sustained during the first two years of the war. Of these lesions, arteriovenous fistulas outnumbered the aneurysms two to one, a finding similarly noted in World War II. The vessels of the head and neck were involved in 11 per cent; the upper extremity, in 33 per cent; and the lower extremity, in 56 per cent. Of the 215 lesions, 134 involved major vessels (Table 1), while 81 lesions were confined to minor vessels. Major vessels are here defined as the common carotid, subclavian, axillary, brachial, common and external iliac, femoral and popliteal arteries. This number does not represent all of the arteriovenous fistulas and false aneurysms resulting from the Korean War, since a number of the lesions were operated upon as emergency procedures at the Tokyo Army Hospital[7] and at other hospitals in the Zone of Interior.[11,12]

Since multiple soft tissue wounds were common, it was not unusual to find more than one vascular wound in a patient. Twelve patients had multiple vascular injuries. Six patients had combined major and minor vessel lesions, five patients had two minor vessel lesions and one patient had three minor vessel lesions. These lesions were represented by combinations of arteriovenous fistulas and false aneurysms. The 12 patients presented a total of 25 separate vascular lesions. An additional patient with a femoral arteriovenous fistula previously had three separate acute vascular injuries of the opposite thigh repaired in Korea. This demonstrates the importance of listening with a stethoscope over areas of multiple wounds, points of entry and exit, in regions of fractures and at sites of needle puncture.

Table 1

Major Vessel Injuries

Arteriovenous fistulas and false aneurysms	Vessel	Acute arterial injuries
12	Carotid	11
8	Subclavian	3
20	Axillary	20
19	Brachial	89
4	Iliac	7
39	Femoral	95
32	Popliteal	79
134		304

Here are shown the major vessels with arteriovenous fistulas and false aneurysms evacuated from Korea for surgery. The acute arterial injuries were repaired in Korea. Minor vessel injuries are not listed.

Differential Diagnosis

Differentiation between a false aneurysm and an arteriovenous fistula was sometimes difficult. This was particularly true early in the study. When obliterative methods of treatment were employed, differentiation was important since the treatment of the two lesions varied considerably. For instance, arteriovenous fistulas develop collateral circulation more rapidly than do false aneurysms and, therefore, usually could be operated on sooner by obliterative procedures. It was also advantageous to know prior to surgery whether or not one would have to control two or four vessels.

There are a number of points of differentiation between the two lesions:

1. Usually in an arteriovenous fistula a palpable thrill is present which is rough, vibratory and continuous. On auscultation a rough, continuous murmur, often described as machinery-like, is heard. There is systolic intensification to the murmur. In the false aneurysm a palpable thrill is not always present. When present it is during systole only. The same is true of the murmur heard over the false aneurysm.

2. In the arteriovenous fistula the pulse rate frequently is rapid and manual occlusion of the fistulous tract usually slows the heart rate—Branham's sign. Such occlusion has been observed to slow the heart as much as 50 beats per minute. This phenomenon is not observed in false aneurysms.

3. In arteriovenous fistulas the continuous

murmur may be transmitted along the vessels proximal and distal to the lesion. In vessels near the heart, the murmur may be mistaken for a heart murmur. In the false aneurysm the murmur is systolic in time and transmitted into the false sac.

4. In an arteriovenous fistula a false sac may or may not be present. In general, when present, the sac accompanying the fistula is smaller than the aneurysmal sac and the pulsations in the former are less pronounced. However, occasionally a virtually pulseless aneurysm may be encountered because of an extremely thick wall which does not transmit the pulsations.

5. The dilatation of superficial veins often is evident in the presence of an arteriovenous fistula but also may occur in the presence of a false aneurysm if the sac occludes the venous return.

6. The various systemic changes to be discussed later are found in the presence of an arteriovenous fistula but absent in patients with a false aneurysm.

7. Arteriography also may be used for a differential diagnosis. The radiopaque dye may be traced through the artery, the fistulous communication and into the vein in an arteriovenous fistula, while in the false aneurysm only the artery and false sac are visualized. This procedure is not routinely indicated.

An arteriovenous fistula occasionally may be converted into a false aneurysm by occlusion of the venous component or by scar tissue constriction of the fistulous tract leaving a false sac intact with the artery.

Local and Systemic Manifestations

Locally the false aneurysm manifests itself primarily by the presence of a pulsating mass over which can be heard a systolic murmur or bruit. Occasionally, distal venous stasis and neurological changes may be evident from pressure and pulsation of the false sac on the adjacent veins and nerves.

While an arteriovenous fistula in some instances may be difficult to differentiate from a false aneurysm, there are usually additional local changes accompanying arteriovenous fistulas. These lesions present a bruit or murmur that is continuous with systolic accentuation and a rough palpable thrill of the same character usually is present. In addition to the pulsation and thrill, the area of the arteriovenous fistula usually is warmer to touch and oscillometric readings are increased locally with gradual diminution more distant from the lesion. Distal to the site of the fistula there may be cyanosis, pallor or even gangrene depending on the size of the fistula and the amount of arterial blood diverted from the area. The skin distally is cooler and may show atrophic changes, edema and ulceration. Varicosities may be evident in the region of the fistulous tract. Venous blood from this area shows an increased oxygen content. Abnormal sweating or dryness varies and changes in sensation vary with the degree of ischemia and nerve damage. In the presence of these changes collateral circulation about the fistula develops by dilatation of existing vessels.

There are no systemic manifestations of a false aneurysm, while an arteriovenous fistula manifests itself in a number of ways, all referable to the cardiovascular system. With formation of an arteriovenous fistula there is a decrease in blood pressure, both systolic and diastolic, with more change in the diastolic component. After a time the systolic blood pressure gradually tends to recover, with an increase in pulse pressure. The venous pressure both proximal and distal to the fistula is increased. An increase in heart rate occurs, and with this an increase in cardiac output. Early after the creation of an arteriovenous fistula there is a temporary decrease in heart size with the diversion of blood through the fistula. With the increase in blood volume, and the increased work-load on the heart, comes a gradual dilatation of the heart which may later lead to hypertrophy and possibly cardiac failure if the fistulous defect is not corrected.

Preoperative Care and Complications

During the preoperative period for patients with false aneurysms and arteriovenous fistulas, it was necessary to evaluate

FIG. 6 (left) shows an arteriogram of an arteriovenous fistula of the popliteal space showing the artery filling the sac with return of the dye through the vein.

FIG. 7. (right) shows a multilobulated traumatic aneurysmal sac with dye in the artery only.

carefully each individual for surgery and to observe for complications.

Following techniques developed during World War II, obliterative surgery was utilized for the early cases in this series. This required a careful preoperative evaluation of the collateral circulation. Many tests were used to evaluate the patient for surgery. For most of the patients these included utilization of occlusive compression tests, reactive hyperemia tests, oscillometric studies, and arteriography (Figs. 6 and 7). Additional studies, which were both diagnostic and for research purposes, were performed on various groups of patients during this period. These included plethsmography, ballistocardiography, oxygen saturation studies, cardiac output measurements,[13] electrocardiography, circulation time, blood volume studies,[14] venous pressure readings, sweat tests, peripheral resistance studies, phlebography, and x-rays for cardiac size. Additional research procedures performed were cardiac catheterization and renal function studies[15] in patients with arteriovenous fistulas, patent and occluded. Other data such as blood counts, hematocrit levels, blood pressure, and pulse pressure readings were recorded for future reference. When the evaluation showed obliterative surgery as dangerous to viability of the involved part, more time was allowed for the development of collateral vessels; or a sympathectomy was performed if indicated. Occasionally, intermittent compression, as described by Matas, was used to stimulate the development of collateral vessels.

Complications had to be prevented during this period. These included expansion of the false sac with hemorrhage externally or into tissue sometimes into a tight fascial compartment with compression of vital structures (Fig. 2). Frequently the pulsation of the false sac, without expansion, caused severe nerve damage and in other instances eroded bone.

To check the progress of lesions suspected of expanding, daily measurements were made at a predetermined level and recorded on the patient's limb as well as on his chart. Added to the threat of expansion was the ever present danger of infection. Sudden occlusion in the distal vessels from thrombi rarely occurred. All patients were observed for ischemic changes distal to their site of vascular injury. Subacute bacterial endocarditis, as a complication of an arteriovenous fistula, was an ever present threat. In this series of 148 arteriovenous fistulas, only one patient developed this complication which proved to be fatal.[16] This patient was one of those with multiple vascular lesions.

This period of observation, study and delay often caused professional concern that rupture and hemorrhage might occur. Patients with large lesions which were of recent origin were required to remain in bed (Fig. 4). They, too, often were apprehensive, uncomfortable or in pain during the weeks and months wait for the development of adequate collateral circulation for excision of their lesion.

SURGICAL MANAGEMENT

With the establishment of a vascular center, considerable organization was required to care for the early patients who arrived in numbers. It had to be determined which patients could be ambulatory and which were bed patients, which had infected or expanding lesions in danger of rupture or damaging vital structures; how many were ready for surgery and how many required more time for the development of an adequate collateral

circulation. The surgical approach alone often presented new problems involving new routes of exposure. Such routes are not demonstrated in the usual textbooks or publications although the works of Elkin[17] and Henry[18] were helpful. Not only was a detailed anatomic knowledge of peripheral nerves, blood vessels and muscles of the extremities required, but also specialized techniques of vascular surgery.

Lesions such as a large arteriovenous fistula between the first part of the subclavian artery and the innominate vein with a false sac made up of bony fragments of the comminuted head of the clavicle created problems of major import. While the larger fistulas caused more systemic changes, the minor lesion was often more difficult to approach and to locate surgically than the larger lesions. Although minor in size, an arteriovenous fistula between the vertebral vessels at the base of the skull was a very major matter to one patient since the the continuous murmur kept him awake at nights and almost drove him to suicide. The surgical approach to minor lesions in such locations is far from minor.

As stated previously, the earliest patients were operated upon utilizing obliterative techniques. For the false aneurysm this meant exposure under tourniquet, whenever possible, opening the aneurysmal sac with suture ligation of the ends of the involved artery and excision of the exposed portion of the sac. For other cases this meant control and ligation of the involved artery proximally and distally with excision of the false sac. In a rare case the opening in the artery was repaired, usually by utilizing a portion of the aneurysmal sac.

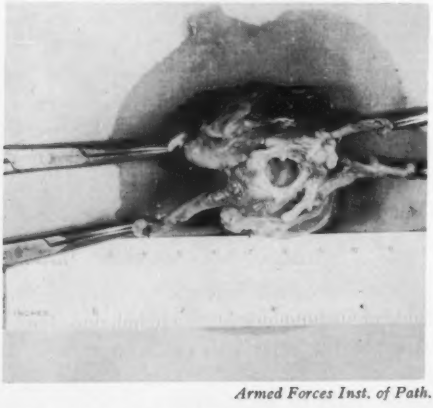


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FIG. 8. Here an arteriovenous fistula with its false sac has been dissected out and removed by ligation of both the artery and vein. Such occlusive surgery for lesions of major vessels has been replaced by reconstructive surgery.

For the arteriovenous fistula, occlusive surgery meant quadruple ligation of the involved artery and vein with excision of the false sac (Fig. 8). Here again an occasional artery was repaired, usually at the expense of the vein which always was sacrificed. It was a rare case where the fistulous tract could be ligated preserving both vessels.

Excision of the false sacs was practiced in the early cases to insure that no communicating vessels remained which might result in a recurrence of the lesion. This later proved to be unnecessary and furthermore was harmful in addition to prolonging the operative time. In removing these sacs there was always danger of injuring adjacent nerves and collateral vessels.

In order to assist the development of collateral vessels and to improve the circulation, sympathectomy often was performed some days prior to the excision of the vascular lesion. In other instances, sympathectomy was done at the time of or following vascular surgery. In spite of these measures, while no limbs were lost, many patients developed varying degrees of arterial insufficiency following obliterative surgery.

While this technique of ligation and excision of lesions of minor vessels was, and is, acceptable, it proved to be very unsatisfactory for lesions of major vessels. Only 30 major vessel lesions were treated by occlusive surgery. Most of those were operated upon in 1950 with only a few in 1951. Early evaluation of those patients having ligation of major vessels showed a high percentage with arterial insufficiency in the involved extremity.[19]

In order to eliminate the long preoperative preparatory period, the additional operation for sympathectomy and the resulting vascular insufficiency, a new policy of restoration of major vessel continuity was initiated. Direct anastomosis was the procedure of choice, however, lateral repair, division of fistulous tracts and insertion of grafts occasionally were indicated. Utilizing these procedures, 98 additional patients were operated on with four failures of the repair.[10] Most of these patients were operated upon in 1951 and 1952.

Utilizing reparative techniques, the long wait for collateral circulation was unnecessary, the need for sympathectomy was eliminated, the patient no longer spent a prolonged, bedfast preoperative period of apprehension, and hundreds of patient days were saved. The threat of hemorrhage and damaging pressure on vital structures no longer caused concern because those patients were operated upon at will and with the knowledge that the vessel could be repaired without danger of limb loss or vascular insufficiency. The false sacs were no longer excised except that portion which was exposed to permit the vascular repair.

While attention had been focused primarily on arterial repair, the involved veins in arteriovenous fistulas usually had been sacrificed. This resulted in a degree of venous insufficiency when the arterial flow was restored. The simultaneous repair of veins then became the policy. While some argued that the repair of the dilated, sacculated vein would cause complications, none resulted and the venous insufficiency was prevented.

Postoperative Findings

Postoperatively, most of the studies which had been performed preoperatively were repeated, particularly in the patients with arteriovenous fistulas. These studies verified previous reports, showing the return to normal of the cardiovascular system in these patients. With removal of the arteriovenous fistula the blood pressure returned to its normal level, after a temporary increase above normal. The pulse slowed, venous pressure and pulse pressure decreased. In all cases the dilated heart returned to normal size with a decrease in blood volume and cardiac output. In only two patients had there been evidence of cardiac insufficiency.[20] Both patients had an arteriovenous fistula of the common iliac artery and vein and developed cardiac insufficiency within three weeks but recovered completely following surgical removal of the fistula and repair of the vessels.

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Fig. 9. This postoperative arterogram shows excellent results following anastomosis of the popliteal artery after excision of the involved area.

Changes in the extremities were recorded again relative to color, skin changes, swelling and the presence of pulses. Oscillometric and skin temperature readings were taken and exercise tolerance tests performed. In a number of patients with reconstructed vessels, arteriography was repeated (Fig. 9).

Except for one patient who died of subacute bacterial endocarditis[16] some months after his vascular surgery, no lives or limbs were lost in the treatment of these patients. Of the 215 arteriovenous fistulas and false aneurysms, all of the 81 lesions of minor vessels, with the exception of four, were oper-

ated upon by excision of the lesion with ligation of the involved vessels. Of the four exceptions, two were repaired by anastomosis and two closed spontaneously. Of the 134 lesions of major vessels, six closed spontaneously, 30 were removed by ligation and excision and 98 lesions were operated upon with reconstruction of the major arterial channels. Although the repair of veins was begun later in the series, approximately 30 per cent of the major veins involved in the formation of arteriovenous fistulas also were restored.

Of the 30 arteriovenous fistulas and false aneurysms undergoing obliterative surgery, approximately 30 per cent developed arterial insufficiency. Early evaluation of the 98 patients, having reconstruction of the involved major vessels, revealed a three per cent incidence of functional vascular insufficiency resulting primarily from failure of repairs. The repair of major veins eliminated the venous insufficiency without further complications.

This series of 215 arteriovenous fistulas and false aneurysms from the Korean War may be compared with the 814 reported from the vascular specialty centers in the Zone of Interior during World War II.[2] Our series, however, was collected in a much shorter time from a much smaller theater of war.

Our results with reconstructive surgery were so gratifying that by June, 1951, the surgeons doing the vascular repairs inquired about going to Korea to repair acute vascular injuries on the battlefield. In the meantime the so-called "peace talks" had begun in Korea and, for that reason, there was delay in sending a team to Korea to attempt such repairs.

Much had been learned from these patients relative to the techniques of vascular surgery. Only with experience does one learn such things as how tight to place his sutures, under how much tension a vessel can be repaired safely, or how much vessel can be resected with anticipation of repair by anastomosis. With this experience the surgeons developed surgical approaches, improved their skill, speed and knowledge of anatomy which later were to be applied and taught in Korea.

Acute Vascular Injuries

While no data have been compiled by the author, it is believed that the rate of amputation, following ligation of major vessels, in Korea must have been similar to that reported from World War II,[2] or approximately a 50 per cent overall amputation rate.

As the Korean War progressed, patients with arteriovenous fistulas and false aneurysms continued to be returned as well as patients who had major vessels ligated and others on which repair of an acute vascular injury had been attempted. One of the earliest groups in which repairs of acute vascular injuries were attempted, consisted of 18 patients.[21] There were 12 known failures in this group, but these patients were operated upon under adverse circumstances and without the benefit of proper vascular instruments.

A consultant to the Surgeon General visiting the Korean theater reported that at one surgical hospital approximately 40 vascular repairs had been attempted with 29 failures.[22] Other instances of attempted repairs have been reported.

It was not until April, 1952, when members of the Surgical Research Team began an active study of acute vascular injuries, that accurate data were compiled.[23] Proper vascular instruments and sutures were secured and distributed to the Army hospitals. Medical officers were sent from various hospitals in Korea on temporary duty to hospitals where trained vascular surgeons—members of the Surgical Research Team—taught and demonstrated the principles of the repair of acute vascular injuries, utilizing clinical cases when available (Figs. 10 and 11). New medical officers arriving in the theater were given orientation lectures on the subject and written instructions on the care of the patient with acute vascular injuries were distributed. After the repair of acute vascular injuries became an accepted procedure, the return of patients with arteriovenous fistulas and false aneurysms virtually was eliminated. United States Army patients

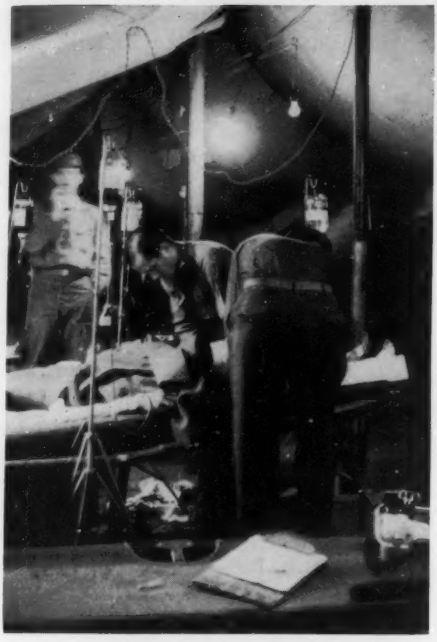

FIG. 10. Successful vascular repairs were done under these conditions. Patients being resuscitated.

having repairs of acute vascular injuries were evacuated to Walter Reed and other Army hospitals, where followup studies were performed. This represented only a percentage of the total patients treated since many of those with arterial injuries were from other nations. As a result of these studies in Korea and the Zone of Interior, a concrete approach to the repair of acute vascular injuries now can be offered.

FIG. 11. Post operative ward of a Mobile Surgical Hospital.

RECOGNITION OF VASCULAR INJURIES

The diagnosis of an arterial injury sometimes is difficult. The changes in the limb of an individual suffering from exposure and shock often are similar to those resulting from vascular injury. The ischemic limb is usually cold, pale or mottled, and pulseless. Such limbs may show hypesthesia or anesthesia, paralysis and muscle spasm or contracture. Conversely, vascular injuries may exist in an extremity which appears grossly normal with the exception of the presence of a wound and possibly a pulsating hematoma. The distal pulses in such extremities usually are weaker than normal, and it is in the presence of this type of wound that an arteriovenous fistula or a false aneurysm develops.

In some cases the diagnosis will be made only at surgery for debridement of the wound, although a wound near a major blood vessel should arouse further suspicion. Comparison with the other extremity may help clarify the diagnosis. The above may be taken as presumptive evidence of arterial damage. In the ischemic limb, early diagnosis is of the utmost urgency since time is the most important element in arterial repair. The patient with arterial damage with a pulsating hematoma and adequate distal blood flow can be given a lower priority for surgery.

ETIOLOGY, TYPES AND DISTRIBUTION

Acute vascular injuries are not incident only to the battlefield. While most often seen in time of war, they also occur quite often in every day life. Blood vessel injuries may be encountered as a result of battlefield trauma, automobile and train wrecks, knife wounds and lacerations by glass or bone fragments. Contusion, crushing and compression are often forms of injury that may be encountered.

Blood vessel injuries may be presented as an open or closed type of injury. The vessel may be severed, or a portion avulsed, in

which case it will tend to contract and the bleeding may stop. If the vessel is simply lacerated, the laceration is held open by contraction of the vessel wall and hemorrhage may be profuse if the soft tissue wound is open. If the soft tissue wound tends to close itself over the vessel, then a pulsating hematoma may develop. Tiny missiles may perforate a vessel wall and remain in the lumen of the vessel or leave it by passing through the opposite wall. Small wounds of this type often seal themselves, but, unless treated, will result in thrombosis of the vessel, secondary hemorrhage or later development of a false aneurysm. Closed injuries of vessels usually result in thrombosis, either as a result of spasm or from tear of the intima which stimulates formation of a clot or from involution of the torn intima which obstructs the vessel.

Since patients with wounds of the great vessels of the abdomen and thorax rarely live to reach a hospital, most surgery of acute vascular injuries involves peripheral vessels. One survey of patients reaching hospitals in Korea showed that the extremities, which make up 61 per cent of the body surface, received 52 per cent of the wounds.[24] A very low per cent of these wounds involved blood vessels. The distribution of acute vascular wounds was approximately: head and neck, 4 per cent; upper extremity, 37 per cent; and lower extremity, 59 per cent; quite similar to the distribution of wounds resulting in arteriovenous fistulas and false aneurysms quoted earlier. The acute injuries, like the arteriovenous fistulas and false aneurysms, were sometimes multiple resulting in as many as four separate vascular injuries.

While most of the individuals studying blood vessel injuries were connected with the Surgical Research Team of the Army,[8, 25, 26] the Navy[27] also was conducting a study in the Marine hospitals in Korea. The publications of all investigators reporting observations made from April 1952 to July 1953, have been compiled into one study,[28] which shows that of 304 major vessels represented in these reports (Table I), 269 were repaired and 35 ligated during this period. This does not represent all the vessel injuries seen or operated on during this period by any means. Vascular injuries were being treated by similar means at other hospitals where there were no investigators and which cases were never reported.

Since repair of injuries of major vessels in Korea was the primary purpose of the study, less attention was given to injuries of minor vessels. Some investigators, however, recorded minor vessel injuries. The reports list a total of 81 minor arteries treated primarily by ligation.

Major vein injuries were noted by one investigator[8] to occur in 63 per cent of the cases with major arterial injuries. This figure may be compared to the incidence of venous involvement in major lesions returned to the Zone of Interior for definitive surgery. Of these lesions 68 per cent were arteriovenous fistula, denoting vein damage.

Control of Hemorrhage

In one group of patients with major vascular injuries studied in Korea,[8] it was noted that 47 per cent of the patients were admitted to the hospital with a tourniquet in place, having been applied from 40 minutes to 14½ hours previously. The average period of tourniquet application was four hours. While the tourniquet may have been lifesaving at the time of application, its prolonged use sometimes resulted in irreversible limb changes.

There are many methods of control of hemorrhage. Probably the safest and quickest method of control is digital pressure. While not practical for any long period of use, it should be utilized as an emergency procedure until other methods can be substituted. For the open wound exposing the bleeding vessel, hemostatic clamps, if available, may be used by the trained individual. The blind application of clamps to a bleeding vessel may result in damage to accompanying vessels and nerves. To apply clamps properly, only the ends of the damaged vessel should be included so that crushed portion may be ex-

cised later with reconstruction of the vessel.

The tourniquet is probably the most often used method of control of hemorrhage. It is also the most dangerous and if improperly applied can do far more harm than good. The tourniquet to be used properly must be applied only tight enough to control hemorrhage, and once properly applied, left in place until it can be replaced with a pressure dressing by a competent individual with necessary fluids, plasma expander or blood available for resuscitation.

The application of a pressure dressing for the control of hemorrhage is no doubt the safest for protection of the extremity. Utilizing an elastic bandage, a pressure dressing can be applied as tightly as a tourniquet, if necessary. The properly applied pressure dressing controls hemorrhage and at the same time allows existing collateral vessels to nourish the extremity while a tightly applied tourniquet occludes all vessels creating an ischemic limb. The tourniquets were removed from the above-mentioned patients and pressure dressings applied as soon as they were received at the surgical hospital and it was a rare case in which the pressure dressing did not suffice. It is this rare case that makes it impossible for us to eliminate the tourniquet and teach the use of the pressure dressing entirely.

Factors Affecting Treatment

There are many factors affecting the treatment of the patient with major blood vessel injuries. Most important of these is the prompt resuscitation and evaluation of the general condition of the patient. Obviously the patient with injury to a large blood vessel may be expected to lose more blood than from an average wound. It was noted by one investigator[8] that 38 per cent of the patients arrived at the surgical hospital in shock of varying degrees of severity even though most had received some treatment for shock prior to arrival. Although such patients received a priority for evacuation, the evacuation time for these patients, as reported by all investigators, averaged four to six hours. An additional similar period of time usually was required for preparing these patients for surgery so that the time from injury to surgery for the entire series averaged 9.2 hours. This delay reflects the severity of the shock and the problems of resuscitation in these patients, both of which further complicated recovery of the ischemic limb.

While massive amounts of blood were utilized in Korea for resuscitative measures, it was the common failure of many medical officers to underestimate the patient's need for blood replacement. This was sometimes evidenced in patients said to be ready for surgery, but in whom movement from the preoperative area to operating room resulted in a fall in blood pressure.

Of equal importance is evaluation of the patient's wounds for priority of care. Only vascular wounds in which hemorrhage cannot be controlled without surgery take first priority, otherwise vascular surgery, while given a high priority, must be secondary to other lifesaving surgery. In some instances where multiple surgical teams are available, it is possible to combine the two surgical procedures. Even though vascular repair may be delayed for hours either by higher priority surgery or lag time from injury to admission, the repair still should be performed. A correlated study of muscle viability performed in Korea[29] showed that irreversibility of ischemic muscles could not be diagnosed clinically. For that reason it was felt that blood vessels should be repaired even in the presence of questionably viable muscles in hopes of preserving an extremity or of lowering the site of amputation.

Method of Treatment

Utilizing techniques and surgical approaches developed on the patients with arteriovenous fistulas and false aneurysms, patients with acute vascular injuries were operated upon. However new problems were encountered in patients with acute arterial injuries which had not arisen in the former group. The time lag from injury to surgery was the major complicating factor to be over-

come. The patient with the acute injury had not had time to develop the collateral vessels, which were found in the patient with the arteriovenous fistula or false aneurysm, and time was of the utmost importance. The injured patient often had to be treated for shock and commonly had multiple, severe, complicating wounds of such size that it made coverage of the repaired vessel a problem. Cold injuries of the ischemic extremity were encountered. Fractures at the site of the vascular damage posed new problems. Fractures complicated by arterial injury with severe soft tissue damage and destruction of collaterals in the past often have been an indication for amputation.

Infection always was to be feared. Since these repairs were to be performed at forward surgical hospitals, this meant further evacuation for these patients. The danger of hemorrhage from the repair site during evacuation caused some concern in the early patients. As these problems were encountered and overcome, the successful battlefield repair of acute arterial injuries became a reality.

Under adequate anesthesia the injured vessel was exposed and controlled both proximal and distal to the injury. The vessel was then repaired with 5-0 arterial silk using a continuous everting type suture. Minor lacerations of vessels with minimal contusion were repaired by simple suture. More severely lacerated or severed vessels were debrided and whenever possible the ends apposed or the defect bridged with a graft.

The soft tissue wound was then thoroughly debrided and the repaired artery covered with muscle or adipose tissue for protection from drying and infection and for nourishment. Coverage of the vessel does not denote closure of the wound. The wound was left open for delayed closure four to six days later.

Closed injuries to vessels resulting in occlusion by spasm or thrombosis were explored and treated as indicated. Traumatic segmental spasm was treated by periarterial dissection and with the local application of 2½ per cent papaverine[30] and 1 per cent procaine. Severe, persistent spasm sometimes required resection of the segment and replacement with a graft. Vessels with thrombosis resulting from trauma usually had sustained enough injury to require resection of that portion with replacement.

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FIG. 12. Arterial defects were bridged with fresh homologous arterial grafts as shown in the defect in a popliteal artery.

Repair. Actual suture repair was the method by which most open injuries of blood vessels were treated. This method of repair had several variations. The simple laceration of the vessel wall was closed by simple suture. More extensively lacerated or severed vessels were debrided and whenever possible the ends were approximated by suture. One investigator practiced extensive mobilization of the vessel at the expense of sacrificing collatered branches,[26] but this practice was eliminated by the utilization of grafts. Fresh homologous arterial grafts were available and used, as were autogenous vein grafts, for bridging arterial defects (Figs. 12 and 13).

Ligation. Ligation was the accepted method of handling arterial injuries early in the Korean conflict. With the institution of reparative surgery, as with the arteriovenous fistula and false aneurysm, ligation was still utilized for most minor vessels. It was found to still have a place in the treatment of

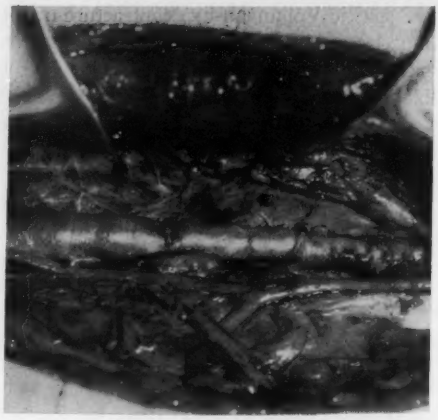

FIG. 13. Fresh autogenous vein graft inserted into superficial femoral artery.

damaged major vessels. Ligation of injured vessels becomes the treatment of choice in the seriously ill patient requiring other prolonged lifesaving surgery.

For large avulsed wounds involving soft tissue and vessels, it may become necessary to ligate unless enough soft tissue remains to cover repaired vessel (Fig. 14). Ligation also becomes the operation of necessity when faced with overwhelming numbers of casualties requiring lifesaving procedures.

FIG. 14. In such large avulsed wounds where coverage of a graft is not practical, ligation of the damaged artery may become necessary.

Based on World War II findings, when ligation of acutely injured major vessels is practiced, approximately 50 per cent of the extremities may be expected to be lost.[2] The mere fact that the limb survives ligation does not mean that it will be a functionally satisfactory limb. Such limbs usually exhibit arterial insufficiency.

Back bleeding from the distal end of the artery was not found to be an infallible criterion as to limb survival following ligation of the artery. While collaterals may exist to the extent to produce back bleeding from an open vessel, they are not always adequate for a viable limb. The theory of ligation of the concomitant vein with the artery, which caused considerable controversy during World War II was discarded. Every effort was made to preserve major veins to the extent that a number of them were repaired.

Conservative Care. Conservative care of vascular injuries was practiced, where possible, early in the Korean War. It was from this group that the earlier reported arteriovenous fistulas and false aneurysms developed. With the repair of acute vascular injuries, these cases were virtually eliminated. It developed, however, that there still were indications for utilizing conservative care in certain instances. Because patients with carotid artery injuries did not tolerate repair of the acute injury too well, pulsating hematomas of the carotid vessels were allowed to develop a false aneurysm or an arteriovenous fistula for future definitive surgery. This method also was utilized for similar lesions of the subclavian vessels where the surgical approach and control of hemorrhage are difficult.

COMPLICATIONS

Following the completion of vascular repairs, in some instances distal pulses were palpable immediately following release of the vascular clamps. In other cases, while the circulation appeared adequate, the return of palpable pulses was delayed. Occasionally, in these cases, after a period of observation, sympathetic blocks of one per cent

procaine were utilized and repeated if necessary. Sympathectomy was not practiced. Patients exhibiting generalized spasm requiring sympathetic blocks were commonly those exposed to extreme cold, having severe ischemia of the limb or prolonged use of a tourniquet. One amputation resulted from spasm of the arterial tree following injury to a lesser branch.

Most vein injuries were treated by ligation, resulting in various degrees of venous stasis. Some patients with major vein ligations were asymptomatic but severe venous stasis resulted in instances of limb loss. To eliminate these complications, two investigators began to repair major veins.[8,27] Some were known to have thrombosed later, but without complications.

While antibiotics were used routinely, an occasional case of infection was observed at the site of vascular repair but rarely was severe enough to complicate the repair. Severe infection may result in thrombosis of the vessel at the repair site or dehiscence of the suture line with hemorrhage.

Anticoagulants were not utilized and are not believed to be indicated. In fact their use might be quite dangerous in the presence of many severe open wounds.

Thrombosis at the repair site was not a problem if the repair was performed properly, a good blood flow and proper blood pressure were maintained. While a follow up study showed thrombosis occurred later in some instances, the process was slow enough to still give a viable extremity.

Compound fractures accompanying 15 per cent of the arterial injuries posed problems at surgery and following surgery, but not to the degree expected. Following surgery, the necessity for stabilizing the fracture complicated care of the vascular repair. Limbs were known to have been lost from fractures which slipped and compressed or lacerated the vessels. Another danger was separation of the suture line with the fracture under traction.

The swelling observed following muscle ischemia often proved to be a problem. This sometimes could be anticipated by observing the spastic Volkmann-like contracture of the muscles of the patient at the time of admission. Following surgical restoration of the blood supply, these muscles were observed to swell and a fasciotomy was required to prevent irreversible muscle and nerve damage.

Limb loss was of course the most severe complication short of loss of life. While some lives were lost, these were rarely as a direct result of the arterial repair. Most of the complications resulting in limb loss are mentioned above but the most common cause of amputation was irreversible muscle ischemia resulting from the time lag from injury to surgery. While this time was greatly decreased over World War II it still averaged 9.2 hours in Korea.

Accomplishments

Although ligation and excision of arteriovenous fistulas and false aneurysms had been the accepted method of handling such lesions for years, it was far from satisfactory. It entailed long periods of delay and observation and repeated tests to determine if ample collaterals existed so that obliterative surgery would be performed safely. For the expanding or bleeding lesion requiring emergency ligation, there was no insurance against limb loss except that offered by sympathectomy. After an early evaluation of the first patients having obliterative surgery for their lesions, the findings of vascular insufficiency made the procedure even less desirable. An early comparison of the two groups showed that of the 30 patients having obliterative procedures for major vessel lesions, 30 per cent had functional arterial insufficiency while 98 individuals having reparative surgery demonstrated only three per cent arterial insufficiency. The standardization of reparative techniques, which allowed surgery to be done at will, not only saved weeks and months of delay but gave results which far surpassed our expectations.

In order to determine the long term results of the surgery in these patients with arteriovenous fistulas and false aneurysms having different types of procedures performed, a

five-year follow up study was done.[10] Of the 215 arteriovenous fistulas and false aneurysms, most effort was spent in securing data on the 134 lesions involving major vessels. The findings were most gratifying and confirmed a number of facts which were becoming evident from observation of the group early. Vein grafts inserted into arterial defects were found to be functioning perfectly after five and a half years. The importance of repairing major veins was substantiated as evidenced by the incidence of swelling and varicosities in those with ligation of major veins. Of all the information collected from this five year study, most important was further substantiation that while the patients with reconstructive vascular surgery continued to do well, the incidence of vascular insufficiency in those with obliterative procedures had increased from 30 per cent to 50 per cent.

The compilation of data on acute injuries of major vessels in Korea from five initial reports from that theater showed 304 major vessel injuries treated of which 35 were ligated.[2,8] Ligation of these acute injuries of major vessels resulted in 51 per cent amputations, almost identical to the figure of 49.6 per cent reported by DeBakey and Simeone from World War II.[2] Of greatest importance, however, are the results achieved in the 269 acute injuries which were repaired with an amputation rate of 13 per cent as compared with the 35.8 per cent amputation rate reported for 81 vessels repaired by suture in World War II.

Great strides have been made by the armed forces in the field of blood vessel surgery. These have been the result of overall advances in the field of surgery, the development of new instruments and techniques, availability of new drugs, faster methods of evacuation and the determination of individuals who went to the battlefield to prove what they believed. Military investigators have contributed immeasurably to these advances. As a result, patients with arteriovenous fistulas and false aneurysms were operated on at will, without loss of limb, with a saving of hundreds of hospital days and with a resulting functional as well as viable limb. Loss of limbs from acute vascular injury on the battlefield was reduced from 36 per cent to 13 per cent. These advances not only have prevented the anguish and disability of limb loss, saved countless days of hospitalization and millions of dollars, and salvaged hundreds of individuals for a more useful life, but have established proven surgical methods for the future.

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References

[1] Makins, G. H.: Gunshot Injuries to the Blood Vessels. Bristol, England, John Wright and Sons, Ltd., 1919.

[2] Surgery in World War II, Vascular Surgery. Office of the Surgeon General, Department of the Army, US Gov't. Printing Office, Washington, D.C., 1955.

[3] Cooke, F. N., and Hughes, C. W.: Unpublished data. Walter Reed Army Hospital, Washington, D.C.

[4] Cooke, F. N., and Campbell, D.: Unpublished data. Walter Reed Army Hospital, Washington, D.C.

[5] Gross, R. E.; Bill, A. H., Jr.; and Peirce, E. C., II: Methods of preservation and transplantation of arterial grafts. Surg. Gynec. & Obst. 88:689 (June) 1949.

[6] Cooke, F. N.; Kuhns, D. M.; Elston, J. T.; Dozier, S. M.; and Fusillo, M. H.: Blood vessel bank. U. S. Armed Forces Med. J. 2:1779-1785 (Dec) 1951.

[7] Russell, J. P.: Secondary Hemorrhage in War Wounds. Symposium on military medicine in the Far East Command, pp. 73-77 (Sept) 1951.

[8] Hughes, C. W.: Acute vascular trauma in Korean War casualties. Surg., Gynec. & Obst. 99:91-100 (July) 1954.

[9] Ziperman, H. H.: Acute arterial injuries in the Korean War. Ann. Surg. 139:1-8 (Jan) 1954.

[10] Hughes, C. W., and Jahnke, E. J., Jr.: The surgery of traumatic arteriovenous fistulas and aneurysms. Ann. Surg. Nov. 1958.

[11] Winn, D. F., Jr.; Downs, C. R.; and Freeman, N. E.: Traumatic aneurysms and arteriovenous fis-

tulas in war wounds. U. S. Armed Forces Med. J. 5:781-794 (Jun) 1954.

[12] Dickenson, E. H.; Ashley, T. E.; and Gerbode, F.: The definitive treatment of injuries to the major blood vessels incurred in the Korean War. West. J. Surg. 59:625, 1951.

[13] Schreiner, G. E.; Freinkel, N.; Athens, J. W.; and Stone, W., III: Cardiac output, central volume and dye injection curves in traumatic arteriovenous fistulas in man. Circulation 7:718-723 (May) 1953.

[14] Schreiner, G. E.; Freinkel, N.; Athens, J. W.; and Stone, W., III: Dynamics of T-1824 distribution in patients with arteriovenous fistulas. Circulation Research 1:548-553 (Nov) 1953.

[15] Epstein, F. H.; Post, R. S.; and McDowell, M.: The effect of an arteriovenous fistula on renal hemodynamics and electrolyte excretion. J. Clin. Invest. 32:233-241 (Mar) 1953.

[16] Parmley, L. F., Jr.; Orbison, J. A.; Hughes, C. W.; and Mattingly, T. W.: Acquired arteriovenous fistulas complicated by endarteritis and endocarditis lenta due to Streptococcus fecalis. New England J. Med. 250:305, 1954.

[17] Elkin, D. C.: Exposure of blood vessels. J. A. M. A. 132:421-424 (Oct 26) 1946.

[18] Henry, A. K.: Extensile Exposure Applied to Limb Surgery. Williams and Wilkins Co., Baltimore, 1952.

[19] Seeley, S. F.; Hughes, C. W.; and Jahnke, E. J., Jr.: Direct Anastomosis Versus Ligation and Excision in Traumatic Arteriovenous Fistulas and Aneurysms. Surg. Forum, Clin. Cong. Am. Coll. Surg., 1952, pp. 152, W. B. Saunders Co., Philadelphia, 1953.

[20] Smith, V. M.; Hughes, C. W.; Sapp, O.; Joy, R. J. T.; and Mattingly, T. W.: High output circulatory failure due to the arteriovenous fistula, complication of intervertebral disc surgery. AMA Arch. Int. Med. 100:833-841 (Nov) 1957.

[21] Stanley-Brown, E. G., and Broun, J. R.: Personal communication.

[22] Warren, R.: Report to the Surgeon General, Department of the Army, Washington, D.C., April, 1952.

[23] Battle Casualties in Korea, Vol. II, The Battle Wound, Army Med. Svc. Grad Sch., Washington, D.C.

[24] Holmes, R. H.: Review of the types, incidence, and magnitude of war wounds. Mil. Med. Refresher Course, Army Med. Svc. Grad. Sch., Washington, D.C., pp. 259, 1953.

[25] Inui, F. K.; Shannon, J.; and Howard, J. M.: Arterial injuries in the Korean conflict. Surg. 37: 850, 1955.

[26] Jahnke, E. J., Jr., and Seeley, S. F.: Acute vascular injuries in the Korean War. Ann. Surg. 138: 158, 1953.

[27] Spencer, F. C., and Grewe, R. V.: The management of acute arterial injuries in battle casualties. Ann. Surg. 141:304, 1955.

[28] Hughes, C. W : Arterial repair during the Korean War. Ann. Surg. 147: 555-561, April 1958.

[29] Scully, R. E., and Hughes, C. W.: The pathology of ischemia of skeletal muscle in man. Am. J. Pathol. 32:805-829, 1956.

[30] Kinmonth, J. B.: The physiology and relief of traumatic arterial spasm, Brit. Med. J. 1:59, 1952.

"We are not a warlike people, but neither will we be trampled into submission and oblivion by Communist deceit, duplicity, or armed aggression. We ask nothing but true peace. . . . We know that peace is not just the absence of war but the presence of justice throughout the world."

SECRETARY OF ARMY WILBUR M. BRUCKER

Memorable Events, Lives, and Books, Calendar of Commemoration for 1959

By
CLAUDIUS F. MAYER, M.D.

". . . Is there—IS there balm in Gilead?—
tell me—tell me, I implore!"
Quoth the Raven, "Nevermore."
(E. A. POE: The Raven, 1845).

HISTORY is the most fundamental science; for there is no human knowledge which could maintain its scientific character when its possessors forget the conditions under which it arose or lose sight of the people who encouraged its budding. By creating a trend for the future, the Past becomes a factor of the Present, and it is an organic element of the future human progress.

Much of the superstition of today's educated men is knowledge whose historical roots have been lost. The fostering of historical sense is therefore an important task in modern life. It is for this reason that, for the past seven years, we have been writing the annual calendars to commemorate the past events, memorable lives, and classical books. Even though by our method of presentation the smooth flow of the past is disrupted in the discontinuous hoppings on the 50-year stepping stones in the River of Time, the recall of yesteryears may yet be the "balm in Gilead" for all of us, consolation for the iniquities of the present life, and anticipation of the dreams that everyone has about the future.

PART 1. MEMORABLE EVENTS

This year's earliest memorable event dates back to the year 509 B.C. when, after the expulsion of the Tarquins, *Rome* ceased to be a kingdom, and elected consuls began to govern the newly established republic. One of the great battles of the Antiquity was Anno Domini 9 at Teutoburg where the Army of the Germans successfully withstood the progress of the Roman legions. The *defeat of Varus* in this battle became the subject of many German poems and legends, and even now, almost 2000 years later, German students are still singing about it.

The year 709 A.D. marks the complete *subjugation of North Africa* (i.e., the Northern coast of Africa) by the Saracens. Ceuta, one of the ancient African towns, was taken by the Moors, and held for more than seven hundred years. In 809 A.D. Charlemagne founded the free city of *Hamburg*. In 1309, Gibraltar was regained from the Moors, and the Knight Templars took hold of Rhodes. The year 1409 is remembered for the election of *Pope Alexander V*. He was once a common mendicant, i.e., an ordinary beggar. As such he was noticed by an Italian monk who procured the beggar's admission into his order. Later, by his industry in studies, the former mendicant gained many patrons. He was said to have been a liberal and great Pope, but the next year after his election he died; as some said, he was poisoned by his favorite cardinal.

Fifty years later (1459), the advancing Turks gained much ground in Europe. Many of the small Aegean islands such as Samos were seized by them. Christian efforts at organized resistance against the heathen were partly responsible for the *creation of the hussars* by King Mathias of Hungary who instituted this Hungarian militia about 1459. As an etymological explanation, it is mentioned that the name of this new defensive unit was derived from the Hungarian words "húsz" (twenty) and "ár" (price) because for the death of a single Hungarian huszár at least twenty of the enemy's cavalry were

cut down. (NOTE: The British Hussars were organized exactly 300 years later, in 1759.)

The year 1509 was very important in the history of Spain and England. Spain invaded North Africa, and subdued Oran, Algiers and Tripoli, which were under the domination of the Arabs. In England, Henry VII died, and with him the Middle-Ages period of England was also buried. Under his successor, the famous *Henry VIII,* the country ceased to be a medieval island, and developed into a modern state of Europe. In 1559, the regency of Netherlands went into the hands of Margaret of Parma. It happened in the same year that Elizabeth, Queen of England, wanted to stabilize and to reform her own coin, and, with the joint efforts of Sir Thomas Gresham and the entire city of London as security, she *borrowed 200,000* pounds from the city of Antwerpen for this purpose. This is also the year when the leadership of the Catholic Church went into the hands of *Pius IV,* a Medici by birth. He founded the Vatican Press.

It was on June 30 of 1559 when two great figures of the medical Renaissance, Ambroise *Paré,* the surgeon, and *Vesalius,* the great anatomist, made political history when they met in Paris on consultation about a *head injury which Henri II,* King of France, accidentally received in a tournament. Four criminals were executed to supply heads for anatomical dissections and for research by the anatomist and the surgeon in search for splinters left from the lance shaft in the King's brain. But to no avail! Eleven days after his injury, Henri II died. After his death, *Francis II* became the ruler, and his two years of government were characterized by all the splendor of renascent France.

In 1609, the Mohammedans were driven out of Spain for good; the Netherlands united, and a truce was concluded between Spain and the *United Provinces* for twelve years. Hence, the number of cruel *buccaneers* and piratical adventurers suddenly increased since the sailors, discharged by the former hostile armadas, had also joined them. The settlement of the *Bermudas* also started this year. The charter of the East India Company was also renewed. Fifty years later, Mahomet IV built two castles, Sestos and Abydos, to command the entrance of the straits of Gallipoli. The castles were named the *"Dardanelles"* from the nearby town of Dardanus.

July 1709 is the month of the memorable *battle of Poltava* in which the ambitious king of Sweden, Charles XII, was defeated by the Russians. It is stated that more than 14,000 Swedish prisoners were then sent to Siberia for a revenge of the king's folly. Fifty years later, as a result of diplomatic discussions, the *Baltic Sea* was declared neutral by Sweden and Russia. England was fighting on several fronts. It had achieved naval victories over Lagos, and it took Surat in India. The war started also against Canada, which belonged to the French. The English took *Fort Niagara* and *Fort Erie,* and were victorious in the battle at Québec. For George Washington, the year 1759 brought a *wife, Martha,* the widow of Daniel P. Custis. On 6 January, his wedding day, he decided to settle down at Mount Vernon and to live in peace as a gentleman farmer.

The early 19th century year of 1809 wears the stamp of the Napoleonic Era. This year, the Russians used the opportunity of a hard winter, and, disregarding the neutrality pact, their Army passed from Finland to Sweden when the *Baltic Sea froze.* In Spain, where Great Britain was fighting France, the British retreating Army was attacked by the French. At the *battle of Corunna,* though the British repulsed the troops of Napoleon, their loss was so heavy that the remains of the British Army had to embark a day after the battle. The year also brought another victory retreat to *England at Walcheren,* an island at the mouth of the Scheldt river in Holland. The British made an expedition to the island with a large land and naval force, under secret destination; but, the French learned about it before the attack. When the English attacked, they could not pursue their victory; rather, they had to retreat because each of the two commanders was waiting for the others' action; or, as the poem said:

"Lord Chatham with sabre drawn
Stood waiting for Sir Richard Strechan;
Sir Richard, longing to be at 'em,
Stood waiting for the earl of Chatham."

The year also witnessed the temporary *defeat of Napoleon* by the Austrian Army at the village of Aspern, which is near the Danube and Wien. He had to retreat. But at *Wagram* his troops were again winning; they even entered Wien, though the Peace Treaty which followed gave back the old city to the Austrians. Soon afterwards, by a decree of the French Senate, Napoleon obtained a *divorce from Josephine,* his beloved wife. Then, he was anxious to obtain the quick consent of the Austrian Emperor to his marriage with the unwilling Marie Louise. He chose the Count of Montenoy, the best horseman of the day, to be his messenger. The count then made his *famous run between Wien and Paris,* a distance of 500 miles, in a little less time than six days. Six relays of horses were provided for him. When the count reached Paris, he was so exhausted that he had to sit down in the presence of Napoleon who was so delighted that he presented the young man with the horse, and with a jewelled snuffbox containing 60,000 francs. In the same year, the French had another trouble spot in Tyrol where *Andreas Hofer* organized and led an *insurrection* against the foreign troops. He was an innkeeper, and, with the aid of his patriotic fellowmen, he drove the Bavarians, the satellites of France, out of Tyrol. Later, Hofer was caught by the French, sent to Mantua, and executed. Afterwards, his family was ennobled by the Austrian Emperor, and his statue is still standing as a symbol of freedom at a square of Innsbruck.

In the Americas, *Ecuador* tried to throw off the Spanish yoke in 1809, while the British attacked Cayenne in French Guiana, and held it for some time. In the U.S., James *Madison* became president, the fourth in the series. In the same year *Illinois* was organized as a territory.

One hundred years ago the British Army abolished the practice of *flogging.* The Coast Brigade of artillery was also established. In 1859 the British were still afraid of an invasion from France. Hence, various acts established a *reserve force* of men who had been in the service before (20,000) and a volunteer reserve for 30,000 seaman. Existing labor laws in England, which regulated the relation between master and workmen, had to be rewritten also due to a three-month long strike in the building industry. Spain was at *war with Morocco,* and the French were fighting the Arab tribes in *Algiers.* Wallachia, Moldavia, the Danubian Principalities, were united under the name *Romania,* and Alexander Couza was elected hospodar of both. The Turkish Porte did not recognize the union for the next three years.

The greatest significance for the future was to be ascribed to the *war between Austria, Italy, and France* which no old-fashioned diplomacy—not even the Russian attempts at peace making—was able to prevent. Austria wished to defend her Italian provinces and Sardinia. France was on the side of Italy. The war was conducted on Italian ground. A series of defeats of the Austrian troops at Montebello, Palestro, and Magenta finally brought the opposing armies together in an ultimate *combat at Solferino* in Lombardy. The hand-to-hand conflict began on 24 June, 1859, and lasted 15 hours; it ended with the loss (killed or wounded) of 19,311 soldiers and 630 officers on the part of the Austrians, and with casualties of 17,305 soldiers, 936 officers, and 8 generals on the part of the allied French and Sardinian armies. In memory of this terrible battle, eleven years later three ossuaries were erected on the site of the battle, containing the bones of thousands of the slain. *Henry Dunant,* a Swiss citizen, was eyewitness to the horrors of the battlefield which induced him to write and to agitate that nations in the future should form some kind of relief society for helping the wounded by qualified volunteers in time of war. His efforts led to the International Conference at Geneva (in 1863), the First Geneva Convention (8 Aug., 1864), and the establishment of the *Red Cross.*

Elsewhere also, the world was reverberat-

ing from the clangor of weapons. The English and French prepared for action against the Chinese. The *Chinese War* started with an attack of the English at Tien-tsin. The French defeated the Chinese, also the Annamese, and prepared the way (for the next year) to the foundation of Cochin-China, with Saigon in it. At the same time, America concluded a commercial treaty with China. In 1859, King Thakombau offered the *Fiji Islands* to the British government, but the offer was not accepted. *Queensland* was made a separate British colony; and an admirer of Queen Victoria, the maharajah of Cashmere, presented her with a *golden bedstead.*

A hundred years ago the Americas were shocked when Juárez confiscated the properties of the Catholic *Church in Mexico.* An anarchist uprising was suppressed in Argentina, and, after six years of secession, Buenos Aires was reunited with the rest of the country. Faustin I was deposed in *Haiti.* The constitution of *Guatemala* was also settled that year. In the U.S., *Oregon was admitted* as a new state, and its constitution was adopted Feb. 14, 1859. The most ominous and remarkable event in eastern U.S.A. was Harpers Ferry's capture by the raiding John Brown (see later).

Arts and Sciences

A search for memorable events in the history of culture and civilization this year produces little from the Antiquity. The origin of the *cultivation of corn* is attributed by the legends to a goddess who taught this art to the Egyptians around 2409 B.C. From Herodotus we learn that the construction of *Necho's canal* at the site of the present Suez canal was abandoned in 609 B.C. after costing the lives of about 120,000 men. From the Roman times, we quote the *Aqua Trajana,* the 36-mile long aqueduct which was completed in 109 A.D. A large-scale construction from the year 209 A.D. was the wall in Scotland which Septimus Severus ordered to be built from the Firth of the Forth to the Clyde (later known as *Graham's Dike*).

A thousand years ago (959), St. Dunstan became archbishop of Canterbury, and attempted to reform the priesthood by enforcing clerical *celibacy.* In 1059, the election of popes was made the duty of the College of Cardinals who had to meet in a *conclave;* until then, much worldly influence was exercised by princes and emperors upon the pope's election. Benjamin of Tudela, famous Spanish rabbi, started his *travels around the world.* He set out from Saragossa in 1159, and went through Italy and Greece to Palestine, Persia, and to the borders of China from where he returned by way of Egypt and Sicily. After his return (in 1173) he soon died, but he left his itinerary in Hebrew, a concise and valuable record which was later translated into many languages.

Anno Domini 1209 the *Franciscan Order* (Gray or Minor Friars) was founded by St. Francis of Assisi. This was also the peak of activities of the *troubadours,* minstrels, and Minnesängers in the European countries. Medieval people liked to amuse themselves, and *bull-fighting* or bull-baiting as a public pastime had been introduced at Stamford during the reign of John (Spain started such fights 50 years later). Sometimes, the public fun ended in trouble as the history of the *Black Monday* (1209) shows. An English colony from Bristol, inhabiting Dublin, went to have some fun at Easter time at Cullen's Wood, when the O'Brynes and O'Tooles attacked them, and destroyed 500 men, women and children. This was also the year when the first stone bridge was finished over the Thames in London. This was the famous *"London Bridge"* of the songs, erected at the site of a former wooden bridge. After 650 years, on 17 March 1859, on the very same bridge, 20,498 vehicles, and 167,910 persons passed over in a single day.

In 1309, progress was made in England toward a standardization of commercial weights. Edward II ordered that a *"public beam"* should be set up in London, and all commodities were ordered to be weighed by the weight-master who was to do justice between buyer and seller. The apparatus was then called "beam and scales." The *University of Leipzig* was chartered by Pope Alexander V as a studium generale on Sept. 9,

1409. In the same year, the *University of Aix* was also authorized in the Provence. Sevilla opened its first *insane asylum* in the same year. In 1459 the University of *Ingolstadt* was chartered by Pius II who also issued the charter to Basel University though it was opened the next year. Printing was introduced to Oxford about this time.

In 1609 the famous *Ambrosian Library* was founded in Milano. Some say that the *thermometer* was also invented that year either by Drebbel, or by Paolo Scarpi. Others ascribed this invention to Galieli. This old Italian master also heard of the *invention of telescope* in the Netherlands. His two-year experiments and logical thinking led him to the principle of his own telescope which he constructed and presented to the Venetian Senate on 23 August 1609. European drugstores were enriched at that time with the drug *"jalap"* which was imported from Mexico around this time. The year is also very rich in events related to the exploration of the Earth and the civilization of America. *Lake Champlain* was discovered by the French navigator after whom it was named. The area of New York State was rediscovered by *Henry Hudson* who, in the service of the Dutch, arrived aboard his ship, the *Half Moon*, in September 1609. It was on 3 September of that year that the first white man set foot on New York soil. The crew of the *Half Moon* landed in a boat at Coney Island. On their return, they were attacked by Indians on 8 September, and a sailor, named John Coleman, was mortally wounded by a dagger that pierced his throat. He was buried at Sandy Hook at a point called later *Coleman's Point.* Thereafter, Hudson visited New Orange, the place which was later called Albany, N.Y.

The same year (1609) was also important in the life of the newly born Jamestown colony. Captain John Smith also tried to establish another settlement, near the present site of Richmond; he called it *None Such*, but the attempt was unsuccessful. The colonists began to produce Indian corn in some quantity on a 40-acre tract. The London Company also imported sheep from England. Meanwhile, one of the first two women colonists who arrived in the previous year, Ann Burras, the maid of Mrs. Forrest, became the bride of a certain John Laydon at the *first wedding* of white people in Virginia. In the same year, Sir Samuel Argall, English mariner, sailed for the first time the Northern route leading direct to Virginia. (He is the man who later captured Pocahontas.)

In 1659, Fromantil, a Dutchman, improved the *pendulum*, and Horrebow discovered the *aberration of light* of the fixed stars. London was plagued by a smallpox epidemic. The Royal *Library of Berlin* was founded that year. Among the medical works of the year, the description of lymphadenoma (later called Hodgkin's disease) by Malpighi, and Willis's record of typhus fever are eminent. Over here, in New Amsterdam (N.Y.), the *first paper money* was issued. The city also got its first *fire department.* It was organized by Peter Stuyvesant, the governor of New Amsterdam. He distributed 250 leather buckets, some ladders, and hooks which were imported from Holland. For the maintenance of the equipment, ONE guilder of tax was imposed upon every chimney. Rattling gave the fire alarm, and foremen were then known as the "Rattle watch."

The year 1709 was the first when people attempted to *heat with coke.* At Lisbon, a certain Don Bartolomeo Lorenzo de Gusman, in the presence of the royal family, made the first attempt at *ascending* with an air balloon. Stereotype was invented (Müller), and an *anemometer* was constructed (Wolffius) to measure the force of the wind. *Fahrenheit*, of Danzig, fixed the zero point of his thermometer by observations made in Iceland. To Prince Ferdinando dei Medici the Italian Bartolommeo Cristofori exhibited specimens of his *harpsichords*, with hammer action capable of producing piano and forte effects. The same year saw the erection of the first *American insane detention* home which was built by the "Religious Society of Friends." In Granby, Conn., the first pioneer *Copper Mine Company* was formed by John Winthrop the younger, for the purpose of exploiting the Simsbury mine discovered a few years

before. The labor force was provided by the inmates of the Hargate prison.

Two hundred years ago, a terrible earthquake shook about 10,000 sq. miles of Syria, and some 20,000 persons perished. In Mexico, a new volcano was born. After one of its 75-year revolutions, the Halley comet again returned (by the way, it will also come in 1985). Peru and Bolivar were visited by an epidemic of influenza. In England, an advertisement was issued about a certain *automatic carriage* made by "Mr. Ladd," "a 4-wheel carriage that goes without horses and will carry 4 or 5 persons at the rate of 6 miles an hour." Smeaten manufactured *Portland cement* in the same year. The manufacture of gauze and of articles of *light fabric* started at Paisley, Scotland. With the increasing wholesale trade, the Bank of England found it necessary to issue its *first ten-pound notes.*

For the support of scholars, new scientific institutions were established. The *Bavarian Academy of Sciences,* and a similar institution in Torino were founded in 1759. The *British Museum,* founded six years before, opened its doors in London. Among the year's *inventions* and discoveries we find the acetic ether (Lauraguais), the laws of swinging of stretched cords (Lagrange), the freezing of mercury at low temperature (Braun, in Russia). Wolff put forward his theory of *epigenesis.* Francis Home described his experiments with human transmission of measles ("Medical Facts", &c., Lond., 1759), William Hillary described sprue, and Mastivier wrote on appendicitis. It was the year when John Bard made the first operation for ectopic pregnancy in America; when Alexander Monro Secundus took his father's anatomical chair at Edinburgh; and when in the American Colonies the first public dissection was made by John Bard and Peter Middleton.

The knowledge of the Earth was enlarged in 1809 by the discovery of the *Mammoth Cave* in Kentucky, which is the largest cave existing in the world. This same year the Bank of England accepted and adopted the machine of inventor Bramah for the *numbering of banknotes.* Many *new inventions* came to light in 1809, such as the bobinet machine (Heathcoat), the camera lucida (Wollaston), the electrochemical telegraph (Soemmering), the cylinder machine for paper manufacturing (Dickinson), etc. In the United States, the Philadelphians proved that a single *horse can* pull more than 10,000 pounds up a slope on a railroad track. The first American watchmaker, Luther Goddard, opened his shop in Shrewsbury, Mass., imported the parts, and assembled them for sale. The first travelable *chain bridge* was built in Massachusetts over the Merrimack, a 68-meter stretch. Sam Parker patented a machine for *leather splitting,* and Talmadge Edwards began to manufacture leather gloves wholesale at Johnstown, N.Y.

Many modern institutions of learning have their foundation in 1809. The *University of Berlin* was founded that year by Friedrich Wilhelm III, of Prussia. Other German universities were fused with the one in Goettingen; the universities of Erlangen and Altdorf were also united. Antwerpen was given a botanic garden. In the U.S., the *Yale Medical School* was planned. The *Miami University* opened at Oxford, Ohio. The first American parochial free school (for women) was also established near Emmitsburg, Md. It is the present St. Joseph's College. In the same year, the *French Hospital* opened in New York. The *Disciples of Christ* group was organized by Presbyterians headed by Thomas Campbell. The first Catholic magazine was issued from Detroit, Mich.

Among the scientific achievements of 1809 we recall the *studies* of Thénard and Gay Lussac on chlorine, the composition of hydrochloric acid from H and Cl by Davy, the research of Reuss an electroendosmosis, the studies on the function of the *cerebellum* by Rolando (R.'s fissure), on endocarditis (Burns), etc. It was the year 1809—the birth year of Darwin—when Jean Baptiste Lamarck came out with his peculiar, now refuted theory of *descendence and evolution* of the higher forms of life from the lower forms, and with his disputable belief that acquired characteristics can be inherited. In the same year the first American vaccination legislation was enacted in Massachusetts. The

towns of Milton and Bedford offered *free inoculations.* A committee was chosen which authorized Dr. Amos Holbrook to charge a 25-cent fee for his services. He inoculated 337 persons which was the entire population of Milton. On 13 Dec., 1809, Dr. Ephraim McDowell carried out the first abdominal *ovariotomy* for the removal of a tumor. The patient was Mrs. Crawford, then 45 years of age; she lived until 78. (In Sweden, the first ovariotomy was made 34 years later.)

One hundred years ago, Mexico, Quito, San Salvador, and the city of Erzerum in the Near East suffered from severe earthquakes. Another great catastrophe of the year hit Key West where a great fire destroyed many homes. New Bedford, Mass., also had its share of fiery destruction. England held a number of *festivals* for public entertainment and for the centennial commemorations of Robert Burns, the Scot poet, the musician Händel, and for the German poet Schiller. Händel's festival, with a huge chorus and orchestra, was held in the Crystal Palace. Other public enjoyments were provided by the first performance of Gounod's *Faust* in Paris, of Giuseppe Verdi's *Masked Ball* in Rome. Another attraction in London was *Lola Montez,* former paramour of the Bavarian king (who had to abdicate on her account); she was engaged for a lecture series. Americans watched the first Intercollegiate Regatta at Springfield, Mass. In Detroit, they admired Michael Phalen, the "father of *billiards*" who played a famous match, winning the championship with a title score of 2000, sometimes playing 129 points at one run. Charles Blondin, a Frenchman, *crossed the Niagara Falls* on a tight-rope. A cable of about 2″ in diameter was stretched below the suspension bridge, with a series of parallel ropes alongside. He gave a series of "ascensions" this year and the next. He carried a man on his back across the cable, pushed over a loaded wheelbarrow, and walked across in a sack. On 14 July 1859 he was dressed as an ape and pushed a wheelbarrow. He usually carried a long pole to balance himself. At the Broadway in New York, at the theater of Bryant's Minstrels, *"Dixie"* the confederate war song, was first sung by its composer, Daniel Emmett, a minstrel actor. (Later, in 1861, it was used at the inauguration of Jefferson Davis, the confederate president.)

England imported 961 million pounds of *cotton from the U.S.,* and 264 million pounds from other countries in 1859. *Exotic animals* were introduced the first time into various countries: the camel in Brazil, the alpaca in Paris, the ostrich in Italy. For the facilitation of administration and trade, a telegraph connection was established between India and England. Germany produced the *tungsten steel.* The Marquis of Staffort exhibited the first *steam automobile.* Lassie's model of an *"aerial ship"* in which the propeller was used was submitted to the French Academy of Sciences, and exhibited in Washington. In June of the same year, Mr. Wise and three others *ascended* from St. Louis, travelled 1150 miles, and half dead they came down in New York. In April 1859, Lesseps started to construct the *Suez Canal* at the Port Said end. The year also produced the first great armored ship, the *La Gloire,* with 12 cm thick armor, while Ebner perfected the sea warfare by construction of *electric mines.*

In the United States, with the boring of the first *petroleum fountain* at Oil Creek on 28 August 1859, the oil industry started. In this year and subsequently, a number of oil springs were discovered in the bituminous coal regions of Northwest Pennsylvania (*"Petrolia"*). The first oil well at Titusville, Pa., operated by Bowditch and Edwin Drake, produced 400 gallons a day from a depth of 69½ feet. The year is also outstanding in the progress in *railway development.* The Great Eastern was launched. Across the Mohawk river at Schenectady, N.Y., the first U.S. wrought *iron lattice girdle* railroad bridge was built for the New York Central. The first *Pullman car,* known as "Old No. 9," was also built this year by G. M. Pullman. It was a small car with 10 upper and 10 lower berths, heating, and lavatory; it had mattresses and blankets, but no sheets (comfortable cars were built after the Civil War). Other comforts of life also began to appear in 1859, such as the first *hotel elevator.* Installment of

the first elevator made the Fifth Avenue Hotel in New York so famous that even the Prince of Wales came over to inspect it next year.

Centennial celebrations will be held by many institutions and establishments which took their origin in the middle of the 19th century. In England, the National *Gallery of Art* was opened, and in London the Metropolitan Drinking-Fountain and Cattle-Trough Association was formed by Lord John Russell and others. In the U.S., the *Louisiana Military Academy*, the colleges of St. Bonaventura, Union Christian, Whitman, St. Elizabeth, and the Valparaiso University will have centennial festivals. The New York Sanitary Convention was also established.

The scientific world was amazed by the *photograph of the moon* which Dr. Henry Draper made in New York; it was 50 inches in diameter, the largest and best ever made. The *musical pitch* was also internationally standardized in France; it was taken that the middle A be of 870 simple, or 435 double vibrations per second. Geissler and others began the study of the passage of electric currents through gases. Helmholtz invented a *resonator* for the better hearing of overtones. James C. Maxwell, physicist at Aberdeen, invented *spectacles* to remedy color blindness. The *spectral analysis* was discovered by Kirchhoff and Bunsen. Nieman produced *cocaine* from the coca leaves which the Novara Expedition brought back. Giraldès, a Paris surgeon, discovered the *paradidymis*, an accessory organ of the male sexual parts. Experimentation progressed in medical research, and the *problem of vivisection* was repeatedly discussed this year in Dresden and in Paris, without reaching an agreement about its merits.

The year's greatest scientific event was the fifty-year old Darwin's announcement concerning the *formation of the species*, which became the leading thought for many decades to come. Garrod, in London, wrote on *gout* and the uric acid diathesis (his "thread test"). Landry described a special type of paralysis while Dumesnil recognized *bulbar paralysis*. Lenhossék, in Hungary, disclosed his pathological and histological studies on the diseases of the *spinal cord*. Under the direction of Sydney Herbert, great sanitary improvements were made in the British Army and in the management of the *barracks*.

Part 2. Memorable Lives

Anaximander, of Miletos (609 B.C.-546 B.C.) is the most ancient memorable figure whom we find this year to celebrate. He was an astronomer and geographer, the first to draw a map of the world. He wrote the first philosophical paper on *Nature*. In this work, he speculated on the origin of the world and life. Assuming that the ground substance of everything, the "arkhé", was infinite, undestroyable and eternal, he proposed a primitive form of descendence theory according to which the animal kingdom developed in the ocean. Fish was the first type of life, then some fish came on land where they developed into various types of land animals; man also originated from an animal species. By his theory, he was thus a precursor of Lamarck and Darwin (whose ideas are also commemorated this year).

Civilization and sciences were obligated to *Ptolemy Philadelphos* (309-246). During his reign, Egypt attained its greatest height. He encouraged literature, and made Alexandria the center of Hellenistic culture. He built the lighthouse of Pharos, and enlarged the library and museum which he provided with many valuable manuscripts. To do definite tasks, he engaged scholars such as Manetho, to write the history of Egypt, or the 72 elders from Jerusalem, to translate the Hebrew Scriptures into Greek (the result—the Septuaginta).

From among the ancient Romans, a few writers, a famous general, and an infamous woman came to our mind. Publius *Terentius Afer* (d. 159 B.C.), born at Carthago and a slave of a Roman senator, became the master of Latin comedy (his plays: Heautontimorumenos, Eunuchs, Phormio, etc.). Titus *Pomponius Atticus* (b. 109 B.C.) was a good friend of Cicero who sent about 396 of his

epistles to Pomponius. In 32 B.C., this rich man was told that he had a disorder which was mortal; thereupon, he went on voluntary starvation, and died in five days. Less friendly to Cicero was Titus *Livius* (Livy) (b. 59 B.C.), the offspring of a noble and wealthy Paduan family, friend and protégé of Emperor Augustus. In his hand, history became a fine art. His "Annals of the Roman People" comprised 142 chapters ("books") of which only a few are still extant (1.-10.; 21.-45.). A few years before Christ, in 9 B.C., Claudius *Drusus* died, the stepson of Augustus, and a Roman general who specialized in warfare against the Germans (hence he was called "Germanicus"). In 59 Anno Domini, *Agrippina* was put to death at the order of her own son, Nero, who could no more tolerate his mother. She was held one of the vilest women in history who caused many scandals in Roman society, and systematically poisoned all her rivals.

The next few centuries bring us the memory of *St. Pamphilius* (d. 309), a Christian martyr, and of *St. Simeon* (Stylites) (d. 459 A.D.), Syrian ascetic, and the first so-called pillar saint (or stylite). Among other memorable medieval saints we select *St. Eloy*, or Egidius (d. 659), apostle of the Low Countries (of Flanders), bishop of Noyon, and a former goldsmith. Hence he was chosen as the patron of smiths and of the horse-doctors. It was believed that upon his touch the ulcers on the horses' legs healed at once.

The name of *Harun ar-Rashid* (d. 809), the Abbasside caliph of Baghdad, reminds us of all the mysteries of the Arabian Nights. He made Baghdad the center of Arabic culture. He was valiant in battle, but rather eccentric, inhumane, and perfidious toward the conquered, and intemperate. He died of apoplexy. In the year of his death, Isaac, a Baghdad druggist of the Nestorian sect, had a son who became one of the greatest figures in the history of Arab medicine. He was *Hunain Ibn Isaac*, or Johannitius in the Latinized form, known as the Erasmus of the Arab renaissance of the 9th century. He translated the then still available ancient Latin and Greek medical works into Arabic, including the writings of Hippocrates, Galenos, Oribasius, and Paul of Aegina. His commentary on Galen, called *Mikrotekhne*, had been used for centuries as the standard textbook of medieval medical students all over Europe. He was also a specialist in eye diseases. A few decades ago, Meyerhof translated some parts of the ophthalmological work of Hunain into English, and the University of Cairo published it.

Search in the fifteenth century brings us the names of *Poggio* (d. 1459), and *Behaim* (b. 1459). Poggio Bracciolini was a learned and illustrious character of the Italian humanism. As chancellor of Florence and secretary to the Pope, he had opportunity to visit many monasteries where he discovered a number of manuscripts of unknown Latin classics, including the "De rerum natura" of Lucretius, the works of Plautus, the "Germania" of Tacitus, etc. To some of us, he is best known by a little collection of jokes and witticisms ("Facetiae"), very characteristic of medieval life. Martin *Behaim* was a German navigator and geographer in Nürnberg, who traveled through Europe as a merchant, introduced various improvements in nautical instruments, and constructed a globe in 1492 which is still in Nürnberg, and shows the wrong ideas that people had of the world before the discovery of America.

The first half of the 16th century (1509) produced John *Calvin* (or Chauvin), who published his "Institutio Christianae religionis" (1536), containing the basic doctrine of Calvinism. *John of Leyden* (b. 1509), Dutch anabaptist fanatic, appeared also at this period. This man was a wandering journeyman tailor. He settled in Leyden as a merchant and innkeeper. At 25 years of age, he became leader of the anabaptists, and established a kind of theocracy, a "kingdom of Zion," of which he proclaimed himself the king. As such he introduced polygamy and declared a communism of goods, which he enjoyed until he was put to death by the bishop of Münster. Three hundred years later, Meyerbeer, the musician, made him the chief

character in one of his operas (Le Prophète; 1849).

From the middle of the renaissance century let us select Matteo Realdo *Colombo* (d. 1559), Italian anatomist, who was the rival and opponent of Vesalius. He anatomized on dogs, and showed by vivisection that the pulmonary veins contained blood. Italians like to consider him the discoverer of the lesser circulation, though much of his material was taken from Vesalius, Ingrassias, and Servetus. Outstanding artists and scholars who died at the beginning of the 17th century (1609) include Michelangelo *Da Caravaggio,* and Annibale *Caracci,* Italian painters, André *Du Laurens* (Laurentius), a medical man, and Joseph Justus *Scaliger,* renowned classical scholar of his time. Du Laurens was the physician of Henri IV, and is remembered for a treatise on goitre which he thought to be a contagious disease. Scaliger's scholarship was extraordinary, even in those days, and he boasted that he spoke 13 different languages, including the Hebrew. He wrote on numerous topics, and was the founder of modern textual criticism. One of his works ("Opus de emendatione temporum"; 1583) made him the father of modern chronology.

Medical bibliographers may be familiar with the name of Joannes Antonides *Van der Linden* (b. 1609), Dutch physician, who wrote a book about medical publications ("De scriptis medicis," Amst., 1637), and translated and published in a bilingual edition the Aphorisms of Hippocrates. We also read of Gideon *Delaune* (1565-1659), an apothecary, who secured the grant of a royal charter of incorporation for the apothecaries in England, though this grant was strongly opposed by the physicians and the grocers (at that time, the selling of drugs was partly a grocery business). This man died after the accumulation of great wealth, of about £80,000. His riches also brought him the gout, and at the end of his life he nestled near the kitchen chimney where he was constantly slighted not only by his daughter-in-law but even by the maid. His Roman contemporary was Paolo *Zacchias* (1584-1659), protomedicus of Rome and physician to several popes. He wrote in three volumes ("Quaestiones medicolegales," etc., 1621-61) which is of great value in the history of medical jurisprudence, especially in reference to eye injuries and insanity. Abel Janssen *Tasman* (1602-59), a contemporary Dutch mariner, is remembered for his exploration of the Australian waters in 1642-44. He discovered Tasmania, New Zealand, and some other Pacific islands, which he described in his "Journal."

In the year 1709, death came to Lady *Castlemaine,* the infamous mistress of Charles II, and to François de *La Chaise,* the father confessor of Louis XIV and the favorite of Cardinal Mazarine. Lady Castlemaine, aside from giving birth to a number of the English king's illegitimate children, was another Messalina, and the diary of Pepys is full with her scandals. Père La Chaise was a favorite of the French king who made him superior of a great Jesuit establishment at Mont Louis. The house and grounds were later bought for a national cemetery which was first used in 1809, and called the "Père La Chaise." In the same year died *Abraham a Santa Clara,* Augustinian monk and preacher at the Court of Wien where he attacked the vices of contemporary life with his Swabish native humor and witticism. We may also recall the fate of Sir *George Rooke* (d. 1709), a brave English commander, who took part in many battles, and captured the almost impregnable fortress of Gibraltar in 1704. But, during Queen Anne's reign, the Whig Party considered him no longer fit to serve his country; he retired to Kent and remained neglected. He did not have much, and his will said: "The little I leave was honestly gotten, never cost a sailor a tear, or the nation a farthing."

Among other contemporary scholars and artists we find Meindert *Hobbema,* one of the greatest Dutch landscape artists, who died in poverty; today, a small painting by him will easily bring $12,000 at the auction sales. Two outstanding French doctors were lost in the same year: François *Mauriceau,*

leading obstetrician of his day in Paris, and François *Poupart,* whose name is perpetuated in the eponym of the inguinal ligament (P.'s lig.). William *Cowper* (d. 1709), English surgeon and anatomist published a not too original anatomical atlas (1698), and described the bulbourethral gland and a ligamentous part of the fascia lata which is attached to the pubic crest.

This year of the early 18th century (1709) was the birth year of *Elizabeth,* daughter of Peter the Great. She had personal attraction, and had many suitors, but she rejected them all. When she ascended the Russian throne (1741), she promised to abolish capital punishment; yet, she was a cruel woman, and she filled the public prisons with tortured people. Two ladies of the court who revealed the secret amours of the Empress, were publicly lashed in the open square of Petersburg, their tongues were cut out, and then they were banished to Siberia. We may also recall the name of James *Adair* (b. 1709), an Irishman, and later pioneer in America, who traded and resided among Indians for 40 years. Thereafter, he wrote a "History of American Indians" (Lond., 1775), promoting the strange idea that the Indians were descendants of the ancient Jews. In France, his contemporary was Etienne *Silhouette* (b. 1709), the parsimonious comptroller general of the French finances. By his various economic reforms, he provoked the ridicule and hostility of the nobles so much that his name was even applied to the mere outline profile drawings so popular at that time ("silhouette").

Other early 18th century births (1709) in the world of science and medicine include the names of Johann *Gmelin,* botanist and chemist, the explorer of Siberia; Samuel *Johnson,* English lexicographer, the "Great Cham of Literature" (for his Dictionary see our 1955 Calendar); Julian de Offory *La Mettrie,* French Army surgeon and materialistic philosopher, who had to escape from France for his belief that Man is nothing but a machine; and Théodore *Tronchin,* a favorite pupil of Boerhaave, and one of the wealthiest and most fashionable practitioners in his day. He was also Voltaire's physician. On the side of his rich practice, he found time for quiet medical observation and for the promotion of public health. He detected that lead poisoning was caused by water passing through gutters of lead roofs. He introduced anti-smallpox inoculation in various countries, and was an apostle of the open air.

Among the individuals who died two hundred years ago (1759) the most outstanding was George Frederick *Haendel* (b. 1685), famous composer and the son of a German surgeon in Halle. His career as a church organist and composer started in Halle, but he was naturalized in England, and composed there most of his oratorios (e.g., The Messiah) where he spent his later years virtually blind due to a cataract. Among the doctors who died in the same year (1759) we recall the memory of Caspar *Casal,* Spanish physician, first describer of pellagra ("mal de la rosa"); Johann Gottfried *Zinn,* of Germany, who wrote on the anatomy of the eye and described the ciliary ligament. He was also an accomplished botanist, and Linnaeus named the "Zinnia" in his honor.

Bicentennial birthday celebrations are due to Robert *Burns* (1759-96), the untutored Scottish national poet who probably has no equal in the literature of the world. The Germans will have festivals for Johann Christoph Friedrich v. *Schiller* (1759-1805) (already remembered in the 1955 Calendar). English politicians will celebrate the memory of William *Pitt,* England's prime minister, and an epileptic, who organized several coalitions against Napoleon, another epileptic, and died when he heard of the Austro-Russian defeat at Austerlitz in 1805 (see also the 1955 Calendar). Two outstanding figures of the French revolution should be mentioned here: François *Chabot,* former Capuchin monk, who wanted to make the Notre Dame Church "The Temple of Reason"; and Georges Jacques *Danton,* demagogue and vulgar lawyer and revolutionary leader, who first worked on the side of Robespierre and

Marat. The careers of both these men ended under the guillotine. Medical historians will devote a few moments to the bicentennial memory of the birth of Johann Christian *Reil,* psychiatrist in Halle and Berlin, and editor of the first periodical of physiology. He published many works on the anatomy and physiology of the nervous system ("island of Reil").

The greatest loss to the world of culture in 1809 was the death of Franz Joseph *Haydn,* Austrian composer, and the first great master of the symphony and quartet. His career was made possible by his long association with the family of the Hungarian Prince Esterházy. He also spent some time in England, and was given the degree of doctor of music at Oxford University. Among his most often produced pieces is the Austrian national anthem ("Gott erhalte unsren Kaiser"). In the same year died also Leopold *Auenbrugger,* internist in Wien, who discovered the percussion method of examination of the chest and lungs (1761). This doctor was the son of an innkeeper, and he owed his discovery of percussion to the skill he developed in having to find the level of the wine in the barrels in his father's cellar by tapping on them. His important publication of 1761 was ignored practically throughout his whole life, yet he was still contented with family life, music and his scientific studies.

Americans who died in 1809 include Jonathan *Trumbull,* former secretary of George Washington, paymaster of the revolutionary Army's northern department. Meriwether *Lewis* also was a presidential secretary, and Jefferson's protégé. After his participation in the Lewis-Clark expedition to explore the Pacific Northwest, he was made governor of the then purchased Louisiana Territory, but some irregularities were found with his accounts. Hence, he was called to Washington, but, when he reached Tennessee, he committed suicide (1809).

Sesquicentennial birth anniversaries are very numerous in every country of the world. England will remember William E. *Gladstone,* repeatedly prime minister in the second half of the 19th century. France will recall the deeds of Baron de *Haussmann,* prefect of the Seine District under Napoleon III, who was responsible for the modernization, and landscape gardening in and around Paris. There is also the socialist Pierre J. *Proudhon,* founder of several radical journals and father of anarchism which he considered as the culmination of social progress. The world of music will celebrate Frédéric *Chopin,* virtuoso pianist and composer of mazurkas, preludes, nocturnes, and waltzes, idol of the Paris salons, and the intimate "butterfly" of the fickle George Sand. People will also replay the symphonies, concertos, and other music of Felix *Mendelssohn-Bartholdy,* son of a Jewish German banker who was converted to Christianity. The world of literature is apt to revive especially the poems of Alfred *Lord Tennyson* (d. 1892), and to reread the masterpiece of Nikolai Vasilievich *Gogol* (d. 1852) about the Russian provincial life. We shall also hear again of the activities and works of Louis *Braille,* French teacher of the blind, who popularized the special characters of elevated points invented to serve as an alphabet for the blind.

The greatest bonfires among the scientists will be made for Charles Robert *Darwin* (12 Feb. 1809-1882), great naturalist, son of a physician and grandson of a physiologist. His travel with Adam Sedgwick, the geologist, to the South Sea islands, and along the South American Coast resulted in the collection of a tremendous amount of material and observations on animal life, which ripened in him to a hypothesis for the explanation of organic life, and of the origin of the many species by means of natural selection (see also the 1958 Calendar). His theory of the descent of Man was enthusiastically further elaborated by philosophers such as Herbert Spencer, and others. At the peak of the popularity of Darwinism, he was looked upon as the Copernicus or the Newton of the organic world.

Among the physicians of the same birth year we point out Francesco *Rizzoli,* orthopedic surgeon and founder of a special institution in Rome; Sir William James Erasmus *Wilson* (d. 1884), eminent dermatologist, who described a number of skin diseases. He also acquired great wealth which he bestowed on the poor and on science. He established the custom of daily bathing. Some of his wealth was also spent on Egyptology. He was the one who paid £10,000 for the transportation of Cleopatra's needle to London. One of the most outstanding figures among his contemporaries was Friedrich G. Jacob *Henle* (d. 1885), German pathologist and anatomist, of Jewish parentage, the Vesalius of microscopic anatomy. His many discoveries include the cylinder epithelium of the intestinal tract, the endothelium of the blood vessels, the loops of the urinary canals, etc. He also had several other hobbies as an artist, a musician, a poet, etc. He fell in love with a servant maid by the name of Marie, and, in a true fashion of the Pygmalion stories, his sister undertook the task to educate the girl to be a worthy wife of Henle. They married but Marie died of tuberculosis two years after the wedding.

The lines of this Calendar are too short and too limited for the evaluation of Abraham *Lincoln* (12 Feb. 1809-15 Apr. 1865), the 16th president of the United States. We are daily passing by the perennial monument where the words of the dreamer son an illiterate migrant laborer are carved in marble for eternity.

Two other outstanding Americans, a poet and a physician writer, will have sesquicentennial birthday celebrations this year. Edgar Allan *Poe* (Jan. 19, 1809) was born in Boston, and, against the will of his foster father, who wanted him to have a different career, he turned to the field of literature. He had some experience in the Army, and at West Point from where he was dismissed for insubordination and neglect of duty. He married, and, as an associate editor of magazines, he tried to make a meager living in New York and Philadelphia. In 1845, after the publication of his *The Raven,* he became famous but remained poor, and tried to find consolation in alcohol. Meanwhile, his wife died from tuberculosis. Poe was much depressed; he even attempted to kill himself (Nov. 1848). His mental condition gradually deteriorated; finally, after an attack of delirium tremens, he died in a Baltimore hospital. (Oct. 7, 1849). As a writer he had but little or no humor, but his poems have an exquisite melody, greatly admired by Baudelaire and the French decadents. Edgar Allan Poe is now venerated in the Hall of Fame, and, as an ironic contrast to his life-time poverty and struggles, a copy of the first issue (1827) of "Tamerlane," his first book of poems, is now selling for $15,000.

The physician writer was Oliver Wendell *Holmes* (29 Aug., 1809-7 Oct., 1894), who graduated from the Harvard Medical School in 1836. He practiced in Boston, and was teaching anatomy at Dartmouth, and at the Harvard Medical School. Among his medical writings the most important is a paper "On the Contagiousness of Puerperal Fever," which he read on 13 February 1843. For this essay, he is sometimes taken by medical historians as a contestant in a priority question against the Hungarian Ignatius Semmelweis. Holmes sprang into literary fame with "The Autocrat at the Breakfast Table," a serial published in the *Atlantic Monthly.* He wrote many novels, biographies, and poems, among them "Old Ironsides," and "The Chambered Nautilus." He also rated a niche in the American Hall of Fame.

Other Americans of the same vintage (1809) include the following: Benjamin T. *Babbitt,* inventor of many things such as soap processes, steam boilers, ordnance projectors, etc.; Frederick A. P. *Barnard,* educator and promoter of coeducation at Columbia University; John A. *Dahlgren,* rear-admiral, who reorganized the Navy ordnance yard at Washington and introduced a new shell-gun in 1850; Cyrus H. *McCormick,* inventor of a reaping machine (1834); El-

bridge G. *Spaulding,* banker, known as the "father of greenbacks" (1861); and John S. *Bobbs,* who made the first gallbladder surgery in this country for the removal of a gallstone (1868).

One hundred years ago, Europe buried Prince Klemens Wenzel Nepomuk Lothar von *Metternich,* Austrian diplomatist who was largely responsible for the events of 1848, for the Holy Alliance, and for the suppression of liberal ideas by autocracy and police despotism. Other graves in the same year opened for Karl Baedeker, German publisher of travelers' guide books; Wilhelm *Grimm,* German educator, and coauthor of the famous "Fairy Tales"; Lord Thomas which he read on 13 Feb. 1843. For this Babington *Macaulay,* writer of England's history; Robert *Stephenson,* famous railway engineer and improver of locomotives. Medical historians may recall the names of Charles *Cagniard de La Tour,* who discovered that alcoholic fermentation is caused by yeasts; Thomas *De Quincey,* who became an opium addict during his student years at Oxford ("Confessions of an Opium Eater," 1821); Baron Alexander von *Humboldt,* German naturalist, traveler and statesman, whose "Kosmos" is one of the greatest scientific works ever published; Alexander *Monro,* Tertius, the "evergreen tertius," degenerate descendant of a line of anatomists, all holding the chair of anatomy and surgery at the University of Edinburgh for a total of 126 years. He held not more than three dissections a year, and when he demonstrated the nerves and arteries, it was on an antique cadaver, and at a distance of one hundred feet.

Among the centennial deaths in the United States the figure of John *Brown,* the "Old Brown of Osawatomie," is outstanding. From 1856 he was obsessed by the idea of abolishing slavery by force, and he massacred several proslavery adherents. In Oct., 1859, he seized Harpers Ferry and the governmental arsenal because he wanted to incite a general insurrection of the slaves. He was overpowered, convicted for treason, and hanged. His sympathizers created a marching song at the tune of "Dixie" ("John Brown's Body") by which his memory is kept alive. Among his contemporaries were: Washington *Irving,* American writer of a humorous history of "Gotham" (N.Y.), a sort of burlesque on the earlier settlers, and the recreator of Rip van Winkle; Thomas *Nuttall,* botanist and ornithologist at Harvard; William H. *Prescott,* historian of Spanish America (Mexico, Peru) who was nearly blind for almost the last 50 years of his life; Alfred *Vail,* pioneer in telegraphy and financial supporter of Morse; John B. *White,* painter of historical scenes, some of which decorate the Capitol. Lemuel *Shattuck* (d. 17 Jan., 1859), of Boston, teacher, publisher, and statistician, recommended the establishment of State boards of health in America (the first of which established in Massachusetts ten years after his death).

Centennial birthday anniversaries are to be held for such European politicians as George Nicoll *Barnes,* British labor leader; Sidney *Webb,* economist and socialist, and founder of the leftist Fabian Society; Francesco *Ferrer Guardia,* who founded a school in Barcelona devoted to antireligious and anarchistic doctrines; Jean *Jaures,* the pacifist French socialist politician who was assassinated by a fanatic on the eve of the First World War; Alexander *Millerand,* radical socialist and president of France (1920-24); and Alfred *Dreyfus* (d. 1935), the Army officer of Jewish blood, accused of treason, whose tribulations and persecution developed into an international scandal. The acting of Eleonora *Dusé,* and the neo-impressionistic paintings of Georges *Seurat* are still vividly before us. We also still enjoy the humor of Jerome Klapka *Jerome,* English novelist and playwright, and we are still amazed at Henri *Bergson,* French philosopher, who, with his "Creative Evolution," became the David to stay the Goliath of materialism and Darwinism.

In the world of science, Svante August *Arrhenius,* and Pierre *Curie* are the best known centennial figures, both of them win-

ners of the Nobel Prize. The Swedish Arrhenius established the theory of electrolytic dissociation; the hydrogen-ion concentation also stems from his studies. The term "ion" was also his creation. The French Curie, also a physicist and chemist, worked on radioactivity, and with the assistance of his wife, he discovered polonium and radium. (He was run over and killed by an automobile in 1906 in Paris.)

Among the physicians of centennial birth the names of Sir A. *Conan Doyle* and of Havelock *Ellis* are alive and internationally known. Conan Doyle, who once served as a doctor in the Boer Wars, will be always remembered as the creator of *Sherlock Holmes* and *Dr. Watson*. One of his earliest detective stories about these fictional characters is "The Sign of the Four" (1889). Before the end of his life (1930), Conan Doyle became interested in spiritism. Havelock Ellis (d. 1939) also gave up his medical practice to study the psychology, anthropology, and sociology of sex. Since 1894 ("Man and Woman") his works in this field appeared in many volumes, translations, and re-editions. Among other European doctors of the 1859 birth we mention: Giuseppe *Gradenigo*, who observed the abductor paralysis in certain cases of middle ear inflammation; Sven Gustaf *Hedin* (not the traveller), discoverer of the hematocrit; Albert *Hoffa*, German orthopedist; Carl L. *Schleich*, who developed the infiltration anesthesia; St. Clair *Thompson*, pioneer laryngologist; Dr. Lazarus Ludwig *Zamenhof*, a Jewish oculist in Warszawa, made himself known as a pacifist and the inventor of Esperanto (in 1887).

Centennial birth celebrations in the United States will bring back to us the charming melodies from the operettas of Victor *Herbert*, Irish immigrant composer of such light music as "Naughty Marietta" and other pieces. American education is still under the yoke of the pedagogical and philosophical ideas of John *Dewey* (d. 1952) who had no respect for "liberal" education nor for scholastic culture; he rather wished "progressive" schools which would be so many miniature communities. Austin Norman *Palmer*, another educator, left his sign upon many American writings since he taught a method of handwriting widely used in American schools. Scientists in the U. S. will hold festivals for Joseph A. *Holmes*, reorganizer of the Bureau of Mines and pioneer in accident prevention in coal mines ("Safety first" is his slogan); Robert H. *Ingersoll*, industrialist who developed the Ingersoll one-dollar watch, "the watch that made the dollar famous" (he became insolvent in 1921); William B. *Parsons*, designer and builder of the first unit of the subway system and of the East River Tunnel in New York; and for many others.

In the field of the medical sciences, the most remarkable American centennial figure is Theobald *Smith*, professor of comparative pathology and pioneer in infectious microbes. His numerous discoveries include the differentiation of the bovine and human types of tuberculosis, immunization against paratyphoid, discovery of the tick which transmits the Texas fever, etc. Jacques *Loeb*, the biophysiologist, came to America from Germany and most of his work was done in this country. He was pioneer in the field of artificial fertilization of eggs of sea urchins and frogs. He developed a theory of tropism, and a mechanistic theory of life, a theory of individuation and speciation, etc.

Part 3. Memorable Books

The 1959 commemorative catalog of books, prints, and writings is headed by Julius Caesar's *Acta Diurna*, a sort of daily newspaper which he started to publish in 59 B.C. According to the tradition, it was about 9 B.C. when *Strabo* began to compose his geographical treatise in the interest of Pythodoris, Queen of Pontus. A famous composition which has definitely reached more reprints and retranslations than even the Holy Scriptures (of which it is a part) is the first Epistle to the Corinthians written by the Apostle Paul in Anno Domini 59. It admonishes that drunkards should be excommunicated from the Church.

The first edition of an often quoted mem-

orable book appeared in 1559, and it became a weapon in the hand of the Catholic Church against all heretic doctrines, or questionable, dangerous ideas, and against immoral literature. It is the *Index Expurgatorius*, approved by the Council of Trent, and issued under Pius IV. At one time or another, some of the world's most outstanding books, even some writings of Catholic prelates, unapproved translations of the Bible, and essays of eminent contemporary philosphers had been placed on the "Index librorum prohibitorum." (E.g., Henri Bergson's "L'évolution créative," published in 1906, was condemned by the Index in 1914).

Important for the authors of England was the first Copyright Act during Queen Anne's times (1709). According to this law, an author had the right of publishing his work for 14 years, and thereafter, if he was still alive, his right was renewed for the rest of his life. Of course, without international agreements and sanctions, such a law did not amount to much protection. In America, James Franklin, brother of Benjamin F., started his newspaper, the *"New England Courant"* in 1709. It was his brother's establishment where Benjamin later learned the art of printing.

One hundred years later, Lamarck published his *Philosophie Zoologique* in which he propounded the theory that all animals developed from monads—living minute particles—by natural selection. He also asserted the heredity of those characteristics which an animal has acquired during a lifetime. Fifty years later, in 1859, Charles Darwin came out with his epoch-making *Origin of the Species* (24 Nov., 1859). With the publication of this book, the old world crashed to pieces, and, after a decade, the whole world was talking evolution, struggle for life, and natural selection.

A less spectacular, but important first issue was in the year 1859 the publication of the first *"Medical Register"* of England, and a quiet book, entitled *Notes on Hospitals* in which Florence Nightingale laid down some of her personal observations. Since then, the Register was often reissued. Nightingale's book was almost forgotten, while the bible of Darwinism reappeared in almost all civilized languages of the world. It took some fifty years' additional research in the natural sciences to dethrone it from the high pedestal which the materialistic philosophy of the late nineteenth century erected for it.

Fifty Years Ago

Fifty years ago the Russian Czar visited England. In the London Zoo the polar bears were given a large and deep pool to swim in. Austria acquired Bosnia and Herczegovina. The Young Turks exiled Abdul-Hamid II by a unanimous vote of the Parliament. In the U.S., Teddy Roosevelt created a newspaper sensation in February by covering 98 miles on horseback between daylight, and dark, i.e., from Washington to Warrenton and back in 17 hours. Cavalry officers admitted that it was a good ride, and a good answer to Army and Navy men who said that a test of 40 miles in the saddle, or 50 miles afoot, in 3 days is unreasonable. A month later, the Roosevelt administration was over, and Taft was inaugurated, riding in a horse-drawn carriage in the great snow on the 4th of March, 1909. Teddy went big-game hunting to Africa, and visiting the kings of Europe.

At the inaugural ball, anyone could appear for $5.00. The dance program included 24 numbers of which 14 were waltzes, among them Lehár's Merry Widow, the Blue Danube of Strauss, and Zierher's Vienna Beauties. There were all the diplomats, Count von Bernstorff of Germany, the Chinese Minister in his gorgeous mandarin coat, the Turk with his fez, the Russian Baron Rosen, etc.—But the new president was not unanimously welcomed. A Des Moines newspaper soon exclaimed, by cursing Teddy who "deserted" the American scene, and left the steering of state affairs to the weak Taft: "Shades of Theodore Roosevelt! May ghosts of the animals he has killed in Africa ever haunt him for having foisted on the country this man Taft!"

In the U.S. Congress, the revision of tariff

started. Congress also passed the Corporation Tax Act; each corporation with an income over $5,000 was supposed to pay its share in the government expenses. In the same year, the Narcotic Prohibition Act was also passed; except for medicinal purposes, importation of opium was prohibited. Since it was the centennial anniversary year of Lincoln's birth, the penny and the memorial stamp (the first in this country) with the Lincoln head were issued. In April, the body of Pierre Charles L'Enfant, French engineer, who planned the city of Washington, was transposed to Arlington National Cemetery. In September, the preferential ballot system was introduced at Grand Junction, Colorado. The Christmas Saving Clubs were also originated that year by the efforts of the treasurer of the Carlisle Trust Company.

Fifty years ago the North Pole was discovered by Robert Edwin Peary, and his faithful Negro servant and four eskimos. Old Edward Payson Weston had completed his walk from New York to San Francisco, covering 3,895 miles in 105 days and 5 hours. The 300-year anniversary of the arrival of Hudson in New York was also a cause of great festivities. The prohibition of alcoholic beverages progressed very seriously in such states as Indiana where by 10 March 1909, more than 50 of the State's 92 counties had ousted the saloon.

In 1909, chaperons were still in vogue in the United States, perhaps because many immigrants brought over this age-old custom from their old countries. About 78% of the inhabitants of New York City were of alien stock this year, and only 22% were American. Early in the 20th century, New York thus became the largest Jewish, and the largest Italian city of the world. Fifty years ago, more and more gentlemen's hands became dirty from adjusting the autos on the roads. More and more advertisements showed them kneeling with soiled hands on the side of a motor car, and sighing: "I wish I had a cake of Hand Sapolio." From then on, the publishers were also awakened, and their newspapers became vociferous organs for stimulating the consumption of commodities. And the stimulants appeared in many forms, mostly in the form of pretty girls. Not even the toasted corn flakes ads could hope to be successful without a pretty head. In September, the hobble skirt made its appearance while, in the gymnasiums, girls began to wear bloomers which were however still condemned on open playgrounds as "unnecessary, unladylike, giving the children a false notion."

In the world of music, Europeans enjoyed the first performance of Lehár's *Count of Luxemburg* in Wien, of Rimski-Korsakov's *Golden Cock* in Moskva, and the *Elektra* of Richard Strauss in Dresden. Over here, the waltzes were gradually replaced by ragtime. Among the popular songs of the streets, Americans heard "I Wonder Who's Kissing Her Now," "Put on Your Old Gray Bonnet," "My Jersey Lily," and some of the compositions of Israel Baline (Irving Berlin). Marie Dressler began to sing her favorite "Heaven Will Protect the Working Girl," a satire about Neuralgie, a village maid, leaving home, with tears in her mother's eyes, and going to work in the wicked city. But when she was tempted in the city after a dinner to have a demitasse, the girl remembered her mother's warnings, and sang:

"Stand back villain; go your way!—
. . . You may tempt the upper classes
With your villainous demitasses,
But Heaven will protect the working girl."

The American theater had its young John Barrymore who was then still playing at the Gaiety Theater in the "Fortune Hunter." "Texas" Guinan also appeared on the forum of the theatrical art. People were reading Mary Roberts Rinehart's popular "The Man in Lower Ten," and the best-seller novel of John Fox, the "Trail of the Lonesome Pine."

Many educational institutions first opened their doors in 1909, and a number of societies were also founded. Among the schools we mention the University of Neuchâtel, the Dublin University College, the Fungchi Medical School. In the U.S., the name of the Medical Evangelists' College at Loma Linda,

Calif., stands out. The Illinois Society of Hygiene, and the Chicago Society of Medical History are also fifty years old. In 1909 the Interfraternity Council also had its first meeting at New York.

Fifty years ago the first wireless messages were sent between New York and Chicago, and the first SOS was transmitted on radio by the operator of the *Arapahoe* when the vessel was near Cape Hatteras. But the greatest progress was made in aeronautics. Bréguet invented the *helicopter*. Louis Blériot, French airman, first flew across the *English Channel* on 25 July 1909. The first *airplane race* was arranged at Reims, France, on a 20 Km. course, where the fastest was the plane of Glenn Curtiss which travelled the course in 15 minutes. A race between dirigible *balloons* was arranged at St. Louis, and the first American monoplane, the *Walden III*, was tested at Mineola where it showed a speed of 52 miles per hour.

Fifty years ago, a German exhibition displayed 1,785 varieties of sausages (malicious tongues say that a good German would rather invent a new sausage than anything else). In the U.S., the *Murphy bed* made its début in San Francisco. The Queensboro Bridge over the East River was opened to traffic, and the Manhattan Suspension Bridge was constructed by the end of the year (for 48 million dollars). In Toledo, Ohio, the first paint-sprayer was manufactured, and an outboard motor engine was developed in Milwaukee. Hiram P. Maxim invented a silencer for firearms to the great delight of the outlaws.

The winners of the 1909 *Nobel Prize* were Guglielmo Marconi and Ferdinand Braun for the development of wireless telegraphy, Wilhelm Ostwald for work on catalysis and investigations into chemical equilibrium and reaction rates, Theodor Kocher, the surgeon, for work on the thyroid gland, and Selma Lagerlöf for her novels. In 1909 we first heard of hydrogen-ion concentration (Sørensen), proprioceptive reflexes (Sherrington), chronaxia (Lapicque), etc. Barton described the cause of Oroya fever (or verruga Peruana), and Brodmann published his cytological studies on the localization of the brain cortex. In the U.S. Army, Russell began to vaccinate the troops against typhoid fever. Doctors started to use iodine in the treatment of goiter, cobra venom against insanity, and surgery was suggested for the treatment of tabes dorsalis (Förster). Fifty years ago, the strange ideas of an Austrian physician were imported to America. In those early days, *Freudism* was identical with the idea that sex is the basis of all conduct. In September 1909, Freud came in person to deliver a series of lectures at Clark University, Worcester, Mass.

The world of 1909 mourned *Swinburne*, the epileptic English poet, whose verses are considered some of the most beautiful lyric ever written in any language. His friend, the novelist and poet George *Meredith*, also died in the same year. Other losses of the same year in the world of science and medicine include the Russian Hermann *Minkowski*, mathematical founder of the relativity theory; Douglas *Argyll Robertson*, English neurologist; Anton *Dohrn*, German zoologist; Hermann *Ebbinghaus*, German experimental psychologist; Emil *Erlenmeyer*, German chemist; Cesare *Lombroso*, who thought that criminals are products of heredity; H. J. *Pfannenstiel*, gynecologist; and Lajos *Thanhoffer*, Hungarian physiologist.

Fifty years ago the U.S. lost Henry Brown *Blackwell*, brother of the first woman doctor in America. He was editor of "Women's Journal," and a pioneer advocate of woman suffrage. Peter F. *Collier*, Irish immigrant, was the founder and publisher of the popular "Collier's Weekly." *Geronimo*, the Apache chieftain, also died fifty years ago. Among the American physicians the names of William T. *Bull* and Henry R. *Stiles* are recalled. Dr. Bull practiced in New York where he was one of the first surgeons to use antisepsis in America. Stiles was the owner of a sanatorium at Lake George, and was also interested in antiquarian research.

* * *

This year's brief review of a few events

and lives of the past again demonstrates that, regardless of the environmental and cultural changes in the historical settings, throughout the centuries Man essentially remained the same in his ambitions, hopes, in his hatred and love, in his struggles and reactions. Individual life histories are always woven from half reality and half dream! . . . And according to the poet it is the dream, the semblance of reality.

". . . . . which brings
To the delirious eye more lovely things
Of Paradise and Love—and all our own!—
Than young Hope in his sunniest hour hath known."

(EDGAR A. POE: Dreams)

U. S. AIR FORCE COMMAND NURSE CONFERENCE

Official Air Force Photo

(L to R) 1st Row: Lt. Col. Miriam R. Pierce (Andrews AF Base, Wash. D.C.); Col. Ida E. Peschon (USAFE, Wiesbaden, Germany); Col. Frances I. Lay (Chief of Nurse Corps, Wash. D.C.); Maj. Gen. Dan C. Ogle (Surg. Gen., Air Force, now retired); Col. Rosemary Hogan (Langley AF Base, Va.); Maj. E. Lynne Christy (Off. Surg. Gen.); Lt. Col. Ruth R. Weidner (CAC, Mitchel Field, N.Y.).

2nd Row: Lt. Col. Roda Jahr (PAF, Hawaii); Lt. Col. Martha Benston (Wright-Patterson AF Base, Ohio); Lt. Col. Dorothy N. Zeller (Elmendorf AF Base, Alaska); Lt. Col. Margaret E. Daniel (Offut AF Base, Nebr.); Lt. Col. Mary Hoadley (MATS, Scott AF Base, Ill.); Lt. Col. Evelyn Kelly (Eglin AF Base, Fla.); Lt. Col. Lucile C. Slattery (Gunter AFB, Ala).

3rd Row: Lt. Col. Margaret E. McKenzie (Norton AF Base, Calif.); Major Laura I. Tosi (Otis AF Base, Mass.); Lt. Col. Doris A. Kehoe (Maxwell AF Base, Ala.); Col. Claretta Evans (Randolph AF Base, Tex.); Lt. Col. Myrtle N. Quamen (Off. Surg. Gen. Wash. D.C.); Lt. Col. Ethel R. Kovach (Deputy Chief Air Force Nurse Corps, Wash. D.C.).

EDITORIAL

I Challenge Your Right to Drive!

By J. Edgar Hoover

MORE THAN four human lives are sacrificed on the roads of America every hour. Traffic fatalities are a major cause of death in the United States. And frankly the problem threatens to become far worse unless our people readjust their thinking and adopt a more realistic attitude toward the citizen who—though law abiding in all other respects—repeatedly violates traffic regulations.

In terms of the grief and suffering which he causes, the careless, indifferent or irresponsible motorist is as great a threat to this country as the most vicious criminal gunman.

Yet disrespect for traffic regulations has become so commonplace throughout the United States today that in the minds of many motorists it is fashionable to exceed the speed limit, to drive through stop signs, to pass other cars on hills and to "run" a traffic light if no police cars are in sight. Reputable citizens—persons who would never think of committing other types of violations—run the gamut of traffic offences without suffering the slightest pangs of conscience.

Loud protests have been raised against the use of radar to detect speeders, and thereby, to make the roads safer for all. Police officers who stop violators are sneered at and subjected to insults. Many offenders complain about the "inconvenience" of having to appear in traffic court. Warnings, pleas and educational programs have made the least impression where the need for them has been the greatest possible.

The time has come for the American people to stop tolerating the arrogant, disrespectful attitude which so many motorists openly display toward the traffic codes. Drivers who prove by their own actions that they constitute a menace to themselves and others must be denied the privilege of operating motor vehicles.

In areas where the existing laws are inadequate to meet the problem, new and more realistic traffic codes should be adopted. Motorists who are guilty of repeated offenses, as well as those who have intentionally placed the lives of other citizens in jeopardy, must be treated as the public menaces they are. Whenever it is in the public interest to do so, maximum fines and long jail sentences should be imposed upon offenders.

Each year, traffic accidents claim thousands of American lives. The senseless slaughter and crippling of human beings on our roads have reached staggering proportions. This problem must be met immediately with forceful, positive action.

The price of failure has become far too great—more than four human lives per hour. *Home and Highway.*

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The Sir Henry Wellcome Medal and Prize

COMPETITION FOR 1959

THE competition is open to all medical department officers, former such officers, of the Army, Navy, Air Force, Public Health Service, Veterans Administration, The National Guard and the Reserves of the United States, commissioned officers of foreign military services, and all members of the Association, except that no person shall be eligible for a second award of this medal and prize and no paper previously published will be accepted.

The award for 1959, a medal, a scroll, and a cash prize of $500, will be given for the paper selected by a committee composed of the Association's vice-presidents which reports on the most useful original investigation in the field of military medicine. The widest latitude is given this competition, so that it may be open to all components of the membership of the Association. Appropriate subjects may be found in the theory and practice of medicine, dentistry, veterinary medicine, nursing and sanitation. The material presented may be the result of laboratory work or of field experience. Certain weight will be given to the amount and quality of the original work involved, but relative value to military medicine as a whole will be the determining factor.

Each competitor must furnish six copies of his paper which must not be signed with the true name of the author, but are to be identified by a *nom de plume* or distinctive device. These must be forwarded to the Secretary of the Association of Military Surgeons of the United States, Suite 718, 1726 Eye St. N.W., Washington 6, D.C., so as to arrive at a date not later than 20 June 1959, and must be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The length of the essays is fixed between a maximum of 10,000 words and a minimum of 3000 words. After the winning paper has been selected the envelope accompanying the winning essay or report will be opened by the Secretary of the Association and the name of the successful contestant announced by him. The winning essay or report becomes the property of the Association, and will be published in MILITARY MEDICINE. Should the Board of Award see fit to designate any paper for "first honorable mention" the Executive Council may award the writer life membership in The Association of Military Surgeons, and his essay will then also become the property of the Association.

Around the World

(Ser. III, No. 3)

By
CLAUDIUS F. MAYER, M.D.

CYPRUS is situated in the Mediterranean, at a point which is very convenient for the approach to all Mid-East countries. Its strategic importance has been known for many centuries, and several powers tried to keep the island in their possession since the Trojan Wars. *Cyprus* is 3,572 square miles (about three times the size of Rhode Island) with a population of 524,000, of which 80% are Greek, 18% are Turkish, and 2% are Armenians, Maronites and others. Nicosia is its capital. The climate is subtropical, with a rainy season during the winter months. In spite of the many hills and rocks, there is enough area for agriculture and animal husbandry. *Cyprus* was annexed to Britain in 1914, but, after the disturbances in 1931, due to the movement of *enosis* (Union with Greece) the island was given back a Legislative Council under the British Governor.

Cyprus is a healthy country, and many of the *conventional diseases* have been eradicated by the health campaigns. Malaria has been absent since 1950. Sporadic cases of relapsing fever, leishmaniasis, sandfly fever, and dengue occur. Echinococcosis is still prevalent, but the enteric fevers are on the decline. The mortality rate is one of the lowest in the world (17 per 1000). The birth rate is 25 per 1000, which will certainly boost the population to a million by the end of this century.

Cyprus as a community is now living under a comprehensive Town and Country Planning. *Sanitation* is still not the best, however. The water supply is from deep wells in the rural areas, while in the towns the water is chlorinated. No central sewerage system is available, and disposal is by septic tank or deep pit latrines. The *food habits* of the people changed somewhat, and they are eating more meats and eggs than before. Meat, milk, and the herds of cows are regularly inspected on the island.

Medical service is well organized. There are general hospitals in all principal towns, including Nicosia, Limassol, Famagusta, and Paphos. (Paphos is the town where according to the Greek legend the goddess Aphrodite first rose out of the Mediterranean.) There are also smaller rural hospitals, some of them maintained by some industrial plants. The total number of beds is 628, or about 1.2 per 1000 persons. The treatment part of the medical service is in the hand of government doctors, but the patients must pay for the appointments (some of them at reduced rate).

There are also about 250 private *practitioners*, most of them Greek Cypriots who have qualified in Greece. They have their own medical association as do the Turkish Cypriots. The *preventive* part of medicine is exercised by the health inspectors of the government. These inspectors are trained in a special school in Nicosia. There is no organized school medical service. The provision of medical service to the industrial employees, from 6,500, are regulated according to the British laws on factories, and workmen's compensation. In January 1957, the Social Insurance Law took effect.

Social welfare is still in its developmental stage. Thus, there is no old-age pension; the children are expected to maintain their aged parents. For a visitor, this is an island of contrasts: intense heat and snow-capped mountains, spring flowers followed by scorched earth, limousines contesting the road with donkeys. There has been political unrest and disturbance during the past few years, but the progress and advancement of all health and social services continues.

At a recent symposium of the World Health Organization on cardiovascular dis-

eases, it was pointed out that in the *European countries, hypertension* should be looked upon as the No. 1 problem of public health. It has been stated that the information on this subject should be freely exchanged between East and Western Europe, because apparently, the two halves of the continent have wholly different ideas on the subject. Let us take, for instance, the Czechoslovaks. The Czechs really take the matter very seriously because hypertension is the primary cause of cardiovascular diseases and of many affections in grown-up people and in the higher age brackets. The law in Czechoslovakia now requires the declaration and *registration of hypertension;* and this seems to be the first time in history that a non-contagious disease was put into this category. But, the benefit of such a system is evident. The special dispensaries are able to follow-up the patients, to help them in finding jobs which are freer of tensions. Extensive studies in the iron-curtain countries, especially in Soviet Russia, Poland and Czechoslovakia, showed that the pressure in the arteries is in direct relation with the *tension in the environment.* During the war it was observed that the closer the soldier was to the front the higher was his blood pressure. During the siege of Stalingrad, most of the inhabitants registered higher pressures. The big problem is how the high blood pressure, which may be considered a physiological reaction at time of tensions, glides over into the condition which we know as hypertensive disease.

There is so much talk about the "standard of living" and about how it may be high in one country and low in another. But, what is actually *THE standard of living?* The expression is a qualitative one, while for any comparison we would need the measurement of quantities. Can the "standard of living" be measured? Apparently not, and the United Nations assigned a *"Committee of Experts on International Definition and Measurement of Standards and Levels of Living."* This happened in 1954. One of the first recommendations of the Committee was to employ the term "level of living" instead of the "standard." It also suggested that, in measuring this level, the following twelve components should be considered:

1. Health, including demographic conditions;
2. Food and nutrition;
3. Education, including literacy and skills;
4. Conditions of work;
5. Employment situation;
6. Aggregate consumption and savings;
7. Transportation;
8. Housing, including household facilities;
9. Clothing;
10. Recreation and entertainment;
11. Social security;
12. Human freedom.

Of course, all twelve components will require the development of special quantitative indicators. Recently, the statisticians of the WHO suggested that the *proportion of deaths at 50 years and over* to total deaths is the most suitable indicator for the above mentioned first component of the "level of living." According to the proportional mortality indicator, the highest standards of living would be in the following countries: Sweden (1), England and Wales (2), Norway (3), New Zealand (4), Scotland (5), Denmark (6), Switzerland (7), Belgium (8), USA (white) (9), Australia (10), France (11), Netherlands (12), Ireland (13), Austria (14), Germany (15), Canada (16), Finland (17), Spain (18), USA (non-white) (19), etc.

All cat lovers may be sorry to hear that a Bristol doctor recently informed the *Royal Society of Medicine* about his hypothesis on the etiology of the so-called *infective polyneuritis* or the Landry-Guillain-Barré syndrome. The doctor saw a case of the disease in which the story was that the patient's cat became ill with a respiratory infection called "cat influenza." Within a few days the patient's wife caught an influenza-like illness and two days later the patient became ill with similar illness, but his respiratory symptoms were followed in seven days by the onset of severe motor paralysis. The man is still alive; so is his cat which recovered. Thereafter, the Bristol doctor saw five other cases in which the onset of the polyneuritis was directly related to an illness of the *patient's cat.* Further studies by virologists and

pathologists are continued to determine whether the feline enteritis has any direct relation to the Guillain-Barré syndrome of man.

The 16th *International Congress of the History of Medicine* was held at the Faculty of Medicine of the Montpellier University last September. Montpellier played a very important role in the medical education of Europe during the previous centuries. For this reason one of the leading themes of the meeting was the analysis of the "connections between the School of Montpellier and the medical institutions of other countries" throughout the centuries. Other leading subjects included the history and development of hospital establishments, medical iconography of the 17th century, and the contributions of the New World to therapeutics.

The great *propaganda against atomic weapons,* and the scattering of defeatism and despair all over the world, with forced demands for stopping the production of these modern weapons of defense, originates from the Kremlin, and it is an important part of the Soviet plans of warfare in the opinion of the *Swiss Military Hygienic Association.* In Switzerland itself, this propaganda has achieved a certain pressure upon the politicians who have become afraid to provide Switzerland with atomic weapons for the defense of its neutrality. There are still many stupid people, say the Swiss military hygienists, who—even after the events in Hungary —will fall for the Soviet slogan of "peaceful coexistence." The Soviet also tries to influence the people of other countries to stop their preparations for a defense against war. At the same time, in the Soviet Union itself, 22 million people were trained in civilian defense and also organized into 3,600 mobile air-defense brigades. Any weakening on the part of the West means a better chance for communism to quickly win a war.

The tendency to stir up a feeling of revulsion against the atomic weapon is very strong in France, as the following lines will illustrate. Some seventy years ago, in 1888, at the inauguration of the institute which is bearing his name, *Louis Pasteur* addressed the President of France with this philosophical reflection: "I would say that *two contrary laws* seem to fight each other nowadays: one is the *law of blood and death* which, creating new weapons of combat every day, forces the people to be always prepared for the battlefield; the other is the *law of peace,* of work, of salvation which can only dream of the delivery of Man from the afflictions which overtook him. The one only looks forward for violent clashes, the other for the support of humanity. This second law, of which we are the instruments, will seek, even in the massacre, to heal the bleeding wounds of the law of war. . . . Which of the two laws will overcome the other? God only knows." Today, at an address of the French *Medical Academy,* Dr. Ramon, in describing the progress of the French medical science along the road of the Law of Peace, remarked that, seventy years after Pasteur, "wars are still ravaging our universe. Multitudes of soldiers and civilians (one should not forget the victims of the bombardments of the towns during the Second World War nor the *hecatomb of Hiroshima*) have been sacrificed to the law of blood and death. This law seems to rule the world today much more than in Pasteur's days. Every day in our era, in the concerto of vain talks about disarmament and about creating an international law of nuclear weapons, we listen to the sound of experimental explosions of atomic bombs, more and more powerful than before. Fabulous amounts are spent on inventions, on production of more and more deadly machines, and one must tremble at the apocalyptic thoughts aroused by the memory of Hiroshima," says this French medical academician.

Various institutions in Mexico City checked the blood sera of their visitors and inmates in an effort to detect the *prevalence of syphilis among Mexicans.* At a clinic of the Social Security, 4,526 persons were tested, and 859 among them were syphilitic (19%). The older patients showed a much higher percentage of positivity. The ratio of syphilis was somewhat lower in women. Among the men in the 35-39 age group, the

incidence of lues was 39%; in the age group 40-44, it was 46.9%; in men over 60, the ratio was 60.0%. In the Women's Prison of Mexico, the average incidence of syphilis reached 40.4%. It seems from the figures that, south of the border, syphilis is truly a serious socio-economic and public health problem. "Not everything that is good for the U.S. is good for Mexico, because Mexico is Mexico" (*No todo lo que sirve en los Estados Unidos sirve en México. México es México).*

In *Paraguay, leprosy* is one of the endemic diseases of major importance. The country is about 400,000 sq. Km, with a population a little more than a million and a half, who earn their livelihood mainly by agriculture. As many as 41.8% of the people live in the capital. In 1942, a Division of Syphilis and Leprosy was created in the Ministry of Public Health, but in 1947 the Division was split into two departments to enable a better organization to combat leprosy. In 1953, a new plan was worked out for the conduct of this fight. The new plan includes detection of cases, treatment of lepers with sulfon drugs, supervision of contacts, preventive measures for those who are exposed, abolition of such coercive means as obligatory isolation of the leper. A pilot survey in the *schools of Asunción* and Luque showed that about 20 of the 9,000 school children who were examined were lepers. By the end of October 1956, 1,606 lepers were detected in Paraguay.

Near the summit of a peak of the *Bolivian Andes,* called Chacaltaya, the University of La Paz is maintaining a *laboratory for high-altitude and cosmic-ray research.* It is situated at a level of 17,000 feet. Though the laboratory is under the direction of the Physics Department of the university, it is also suited for medical and biological research. It is not entirely isolated since a number of miners and their families are also living in this general area and altitude. Last fall, a survey was made among the mountain people to ascertain their organismic reaction to the environment. Results of the survey are awaiting publiction (according to a brief note in Aviation Medicine).

A survey of the *nutritional status of Cuban children* also revealed the amazing fact that the largest single source of calories in the Cuban diet was rice (22.2%), that sugar was next (17.5%), followed by lards and oils (13.7%), animal flesh (11.5%), flour (8.8%), and beans (5.6%). Deficiencies of protein, vitamin A and ascorbic acid are practically non-existent in Cuba. Only 4% of the children showed low hemoglobin levels (11% or less); thus, the iron, folacin, and vitamin B_{12} intake is also adequate. Yet, one third of the school children of the 11-13-year age bracket do not get enough to eat. Riboflavin deficiency is quite common (20%), and subclinical beriberi and pellagra are also quite prevalent in the island. Of five million acres of arable land in Cuba, 3.89 million acres are reserved for sugar cane, an export crop, and this contributes almost nothing to the food supply of the population.

In *Africa,* more than 150 million people are living between the Tropic of Cancer and the Tropic of Capricorn. Their medical care is very scanty. This is partly due to the *lack of proper medical schools.* There are eight medical schools in this part of the continent, and one in Durban, South Africa. The language of teaching is English in 5; French in 14. The schools include the Kitchener School of Medicine which is part of the University of Khartoum; the Makerere College, with the Mulago Hospital in East Africa; the African School of Medicine and Pharmacy in Dakar; the Medical Faculty of the University College of Ibadan in Nigeria; the Kano Medical School in Nigeria; the medical branch of the University of Louvain set up at Kisantu, in the Lower Congo; the medical faculty of the University of Belgian Congo and Ruanda Urundi; the School of Medicine and Pharmacy at Tananarive, Madagascar. The *Madagascar Medical School* was founded in 1896. Graduates are entitled to practice in Madagascar and its dependencies. Recently, this school was put under the patronage of several French universities (—the usual procedure —) and thereby the graduates will have a better chance for study and will receive a certificate equivalent with the French State

Diploma. Education at the medical schools of Dakar and Madagascar is without fee.

It has been known for some time that accidental overdose of insulin may cause death. But the hormone has never been previously abused. Now, from the land of classical murders, we read the current report on the *"case Regina versus Barlow"* where the Queen's men accused a husband of *murdering his young wife with insulin injection.* The detection of the crime needed some very clever reasoning and physiological thinking, because the death was very cunningly camouflaged as accidental drowning by the husband who happened to be a male nurse. He was found guilty and sentenced to life imprisonment.

Our *modern drug therapy* is undergoing a thorough revamping. Until recently, the materia medica was filled with extracts and decoctions, oils and infusions, resins and tinctures, roots and fruits. Much of this is gone now, and it takes a long day's search in a city as large as Washington to find the root of Senega or an ounce of the tincture of Rathaniae. Also, many of the recently introduced drugs made some of the older *chemical preparations obsolete.* Bromides, sulfonal, acetanilide, strychnine, atoxyl, croton oil, etc. etc., are now almost forgotten. But drug therapy in its modern form requires a critical approach on the part of the physician. Clinical trial and the scientific approach should protect the patient and the physician alike. The *scientific approach* is also important in the treatment of individual cases. A drug which is supposed to do wonders may be worthless or even harmful for certain people. The scientific attitude which a doctor has to take toward his drug therapy is well illustrated by the small boy who was watching an elderly relative powdering her face before a mirror. "Why are you doing that, Auntie?"—he asked. "That is to make Auntie look beautiful," he was told. Then the little kid asked, "Then why doesn't it?" . . . *Multa paucis!*—HAPPY NEW YEAR!

JOIN THE MARCH OF DIMES

—Toward Greater Victories—

For

Birth Defects Arthritis Polio

NOTES

Timely items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—HON. FRANK B. BERRY, M.D.
Deputy Ass't Sec'y—HON. EDW. H. CUSHING, M.D.

GOLD MEDAL AWARDED TO AFIP EXHIBIT

A gold medal was awarded to an Armed Forces Institute of Pathology exhibit on "Pathology of Ionizing Radiation Injury to Hematopoietic Organs" which was displayed at the Joint meeting of the American Society of Clinical Pathologists and the College of American Pathologists in Chicago, Illinois, 3-7 November 1958.

The four-panel exhibit, constructed by the Medical Illustration Service, covers results of pathological studies of the effects of radiation on blood forming organs in pigs as compared with experimental work conducted at the Armed Forces Institute of Pathology using an artificially produced isotope ($Cobalt^{60}$ bead) injected in the spleen and bone marrow of pigs. These experiments were conducted by Colonel Carl F. Tessmer, MC, Chief of Radiation Injury and Radiobiology Section, Armed Forces Institute of Pathology, and his assistant, Captain Alexander Horava, MC.

Of the six medals awarded at the meeting, two are gold medals. One is awarded for original research work and the other for educational production of a medical subject. The above exhibit was selected for its educational aspects of a medical subject.

SELECTIVE SERVICE

The Selective Service System has been asked to provide 9,000 men during January 1959 for assignment to the Army.

Army

Surgeon General—MAJ. GEN. SILAS B. HAYS
Deputy Surg. Gen.—MAJ. GEN. JAMES P. COONEY

ASSIGNMENTS

Colonel A. A. Cardona, MC, has succeeded Colonel Thomas N. Page as Chief of the Medical Plans and Operations Division, Office of the Surgeon General. Colonel Cardona, who received his medical degree from George Washington University in 1931, is a graduate of the Command and General Staff School (1943).

Lt. Colonel Robert H. Holmes, MC, has been appointed Chief of the Biophysicis and Astronautics Research Branch in the Headquarters of the Army Medical Service's Research and Development Command, Washington, D.C.

From 1948-1949 he was research pathologist at the Army Institute of Pathology (now Armed Forces Institute of Pathology); 1949-1950 he was Chief Pathologist, Board of Health Laboratory, Ancon, Panama; 1950-1953 he was Chief of the War Wound Pathology Section, Armed Forces Institute of Pathology. Recently he had been Commanding Officer, First U. S. Army Medical Laboratory, 90 Church St., New York.

Lt. Colonel Fernando S. Rojo, MSC, has been assigned program coordinator in the Medical Plans and Operations Division, Office of the Surgeon General.

During World War II, Colonel Rojo served in Africa, Italy, and Okinawa, and

after the war spent nearly four years in Germany. In 1955 he received his degree in Military Science from the University of Maryland and has studied hospital administration at the State University of Iowa.

HONORED

Major General Paul I. Robinson, Retired, who was the first Executive Director of the Dependents' Medical Care Program was awarded the Distinguished Service Medal by the Army at a ceremony in Washington on November 18.

FELLOW AMWA

Colonel John B. Coates, Jr., MC, Director of the U. S. Army Medical Service Historical Unit, has been elected a Fellow of the American Medical Writers' Association. He was also re-elected to serve a second term as a director of that association.

RECIEVES ACHIEVEMENT AWARD

Lt. Colonel William L. Austin, MSC, received an Outstanding Achievement Award from the University of Michigan, Ann Arbor, on November 15. He was one of the first ones to receive the award which was established in May 1958 by the Regents of the university.

Colonel Austin, a native of Wallington, N.J., is the first full-time consultant in pharmacy to the Surgeon General of the Army. He was greatly responsible for the development of the Army Medical Service Formulary (TM 8-245) recently published.

LETTERMAN DAY

Governor Goodwin J. Knight, governor of the State of California, proclaimed December 2, 1958 "Letterman Army Hospital Day" in that state in commemoration of the 60th anniversary of the founding of that hospital which is located at the Presidio of San Francisco.

The hospital was named after Jonathan Letterman, Surgeon General of the California National Guard in 1868. Major Letterman was Civil War Medical Director of the Army of the Potomac, and in that position he reorganized the field medical service and created an effective ambulance service for the evacuation of battle casualties.

Colonel A. L. Tynes is the present Commanding Officer of the hospital.

RETIRED

Colonel Velmer W. McGinnis, Chief of the U. S. Army Veterinary Food Inspection Detachment at Maywood, Calif., retired November 30, 1958 after 23 years of service with the Army Veterinary Corps. He will reside near Portersville, Calif.

Colonel Thomas Nielson Page, MC, retired after nearly 30 years of Army service. At the time of his retirement he was Chief of the Medical Plans and Operations Division, Office of the Surgeon General. He is temporarily residing at 2066 Woodley Road, Montgomery, Ala.

Colonel John H. Rust, III, retired November 30, 1958 after 23 years of service with the Army Veterinary Corps. He was Chief of the Veterinary Pathology Section, Armed Forces Institute of Pathology, at the time of his retirement. Colonel Rust has accepted an appointment with the Massachusetts Institute of Technology.

THE CHESTERS AND THOMASES

The Thomases did not do it on purpose and we cannot blame two loving mothers for the way this all worked out.

But the Thomases in the 30's did move into the same quarters at Fort Sam Houston that had been occupied by the Chesters, and the two families were in Hawaii at the same post although at different times. They had never met.

Fate, we shall call it, brought John B. Chester and Hilda Thomas together at college. Now they are married and Captain John B. Chester, Jr., Medical Corps, U. S. Army, and son of a retired Medical Corps officer, is back at Schofield's Main Post Dispensary, the place he was born 28 years ago. Son Mike recently wanted to claim the Lone

Star State as his birthplace so he arranged to arrive five weeks before the Chesters sailed for Hawaii.

SAFETY AWARD

The National Safety Council's Award of Honor was given to the Army for its marked improvement in reducing frequency of accidents during Fiscal Year 1958.

The Army military vehicle accident rate for that year was cut from 1.5 to 1.2 accidents per 100,000 miles driven—a reduction of 19 percent over the previous year.

CODE OF CONDUCT CARD

An attractive wallet-sized card bearing the six articles of the Code of Conduct (See MILITARY MEDICINE, Vol. 117:467) is now being distributed for issue to each member of the active Army and Reserve forces for their personal retention. The card is designed to help personnel become more familiar with the wording and have better understanding of the significance of the Code.

ALIENS NOTE

Under the Immigration and Nationality Act of 1952, all aliens serving in or accompanying members of the Armed Forces in the Contential United States, Alaska, Hawaii, Puerto Rico, Guam or the Virgin Islands, are required by law to report their addresses to the U. S. Immigration and Naturalization Service each January.

Service personnel, members of their families, and others including "Lodge Act" enlistees, falling into this category should obtain and fill out an address report form (I-53) at the nearest post office or Immigration and Naturalization Service office and return it to the clerk.

Aliens serving with or accompanying members of the U. S. Army overseas must report their addresses within ten days after returning to the Continental United States, Alaska, Hawaii, Puerto Rico, or the Virgin Islands. Army Regulation 608-73 outlines details of these requirements.

Navy

Surgeon General—REAR ADM. BARTHOLOMEW W. HOGAN

Deputy Surgeon General—REAR ADM. BRUCE E. BRADLEY

ASSIGNMENTS

Rear Admiral Curtis W. Schantz, DC, has assumed duties as Assistant Chief for Dentistry and Chief of the Dental Division, Bureau of Medicine and Surgery.

Captain Eric G. F. Pollard, DC, has assumed the Command of the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland.

RETIRED

Rear Admiral Ralph W. Malone, DC, who was Assistant Chief, Bureau of Medicine and Surgery and Chief, Dental Division, retired on November 1, 1958 after thirty-two years of service. He had served at one time as personal dentist for President Franklin D. Roosevelt.

Recently retired are: Captain Roy E. Crowder, MC; Captain Carl A. Schlack, DC; Commanders William A. Breathwit, MSC, and Robert J. McCarthy, MC; Lieutenant Commanders Joshua "S" Bean, Jr., MSC, Ivan W. Silliman, MSC, and James A. Traxler, MSC.

Air Force

Surgeon General—MAJ. GEN. OLIVER K. NIESS

Deputy Surg. Gen.—MAJ. GEN. OLIN F. MCILNAY

PORTRAIT OF GENERAL OGLE

A portrait of the third Surgeon General of the United States Air Force, Major General Dan C. Ogle, was recently accepted by a portrait committee. The committee was composed of Major General Olin F. McIlnay, Deputy Surgeon General of the Air Force; Brig. General John K. Cullen, Director of Plans and Hospitalization, Office of the Surgeon General; and Colonel George B.

Green, Chief of Medical Team, Office of the Ass't., Chief of Staff for Intelligence, Hq., U. S. Air Force.

The portrait was painted by Mr. Gardner Cox of Boston, Mass., a foremost contemporary artist, who is one of two living artists with portraits in the National Gallery of Art. The painting is a gift to the United States Air Force from all components of the Medical Service and will be on permanent display in the Surgeon General's office.

MOVIE FILM

Vertical Frontiers, the first film on Space Medicine, was premiered in Washington, D.C., on December 2, 1958. Introduced by Lt. Colonel Raymond Towne, the former Surgeon General of the Air Force, Major General Dan C. Ogle, told the audience of some of the problems in the production of the film and of the sponsorship of the film by Winthrop Laboratories. In the audience were many prominent individuals among whom were Major General Harry Armstrong, former Surgeon General of the Air Force who organized the Space Medicine Division, Doctor Hubertus Strughold, an authority on Space Medicine, and representatives from Winthrop Laboratories and the film producers.

Following the admonition that if man is to travel in space he must take along his sea level atmosphere, the narrator presents many of the problems involved in such travel while we view scenes of the helmet and goggle days of aviation and the much more recent experiments with animals in rockets, man in confined spaces of test apparatus, and the oxygen cycle with algae and rats.

The 28-minute color film is available for showing to all types of assemblies, both professional and non-professional, and will be of equal interest to such groups. For further information contact Winthrop Laboratories, 1450 Broadway, New York 18, N.Y.

NEW HOSPITALS

The Air Force recently dedicated two new multi-million dollar hospitals, one at Andrews Air Force Base, Washington, D.C., on November 7, 1958 (see cut on cover), and the other one at Scott Air Force Base, Illinois on November 8, 1958.

Both hospitals are essentially on the same plan. They are completely air conditioned and

Official Air Force Photo (Scott AFB)

MISS VIOLA MAZEKA, secretary at Scott Air Force Base Hospital, dispatches a message to a nurse station.

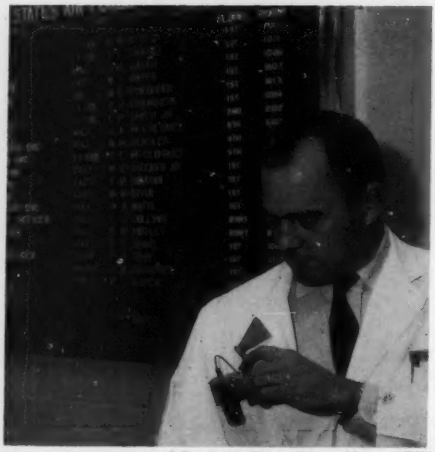
Official Air Force Photo (Scott AFB)

Ultrasonic cleaner removes dirt from surgical instruments by use of sound waves.

include many modern systems such as central oxygen distribution, vacuum suction, pneumatic tube message delivery, central clock control, intercommunications in all clinics and ward areas, radio public address, audio-visual nurses and doctors paging, master antenna system for all television receivers located throughout the patient areas, and closed system television service for instruction in professional subjects.

Each hospital has an ultramodern kitchen furnishing central tray service, a library, barber shop, post exchange and recreation areas for the patients.

The Commanding Officers are: Colonels A. L. Jennings for Andrews Air Force Base Hospital and C. B. Stilson for Scott Air Force Base Hospital.



Official Air Force Photo (Scott AFB)

Miniature Transceivers eliminate the need for a public paging system for the medical staff. Individuals can be called personally from any part of the building.

AERO MEDICAL ASSOCIATION

The 30th Annual Meeting of the Aero Medical Association will be held at the Statler Hotel, Los Angeles, Calif., April 27-29, 1959. The General Chairman is Charles I. Barron, M.D., Lockheed Aircraft Corporation.

Public Health Service

Suregon General—LEROY E. BURNEY, M.D.
Deputy Surg. Gen.—JOHN D. PORTERFIELD, M.D.

ASSIGNMENTS

Dr. W. Palmer Dearing, U. S. Public Health Service, has been made Director of Health Services for the new Office of Civil and Defense Mobilization which was formed by the merger of the Office of Defense Mobilization and the Federal Civil Defense Administration.

Medical Director M. M. Van Sandt has been assigned to the Radiological Health Division, Special Projects Branch, Public Health Service, Department of Health, Education, and Welfare, Washington, D.C. His former assignment was with the Office of Civil and Defense Mobilization.

POLIOMYELITIS

For some years now we have witnessed the traditional MARCH OF DIMES. Originally established to wage a war against one disease—poliomyelitis—the march this January takes on other virus diseases and disorders of the central nervous system, and also arthritis and birth defects. This MARCH OF DIMES supports the National Foundation, formerly the National Foundation for Infantile Paralysis.

But poliomyelitis is not yet fully conquered. There were more paralytic polio cases in 1958 than in 1957. Yet there was plenty of Salk vaccine. Does it take more epidemics to get people to be vaccinated? Why the negligence? A smoldering fire can easily become a holocaust. Let us not permit this in the case of polio. VACCINATE.

RESEARCH CENTER OPENED

Drugs for mental illness will be studied in the new Clinical Neuropharmacology Research Center at Saint Elizabeths Hospital, Washington, D.C. The project is to be operated jointly by that hospital and the National Institute of Mental Health, both institutions

of the Department of Health, Education, and Welfare.

The Center is being equipped for a comprehensive, scientific assessment of the tranquilizing and energizing drugs and their effects on mental function, particularly in the treatment of mental disorder. With a patient-population of 7,500 Saint Elizabeths Hospital provides an ideal location for the research study.

RETIRED

Commissioned officers recently retired from the Public Health Service: George T. Carr, Senior Assistant Surgeon; Harry J. Dunshee, Senior Dental Surgeon; Mary D. Forbes, Senior Nurse Officer; and Alfred H. Wieters, Sanitary Engineer Director.

Veterans Administration

Chief Medical Director—WILLIAM S. MIDDLETON, M.D.

Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

APPOINTMENT

Dr. Michael H. Travers has been appointed as director of domiciliary homes for the Veterans Administration.

A native of Pittsburgh, Pa., he received his medical degree from the University of Pittsburgh in 1928. He was in private practice until 1942 when he came on active duty in the Army. In 1946 he left the military service with the rank of lieutenant colonel and has been with the Veterans administration since.

DECREASE IN VETERANS

After 19 years of increase, the number of war veterans in the nation is on a downward trend.

The all-time high of 22,735,000 was reached in March of 1958. On October 1, 1958 there were 22,723,000, veterans in civil life. The September 30 breakdown of veterans showed that 4,463,000 were veterans of the Korean Conflict alone; 15,274,000 saw service in World War II; 2,852,000 were veterans of World War I and 134,000 were veterans of all other wars including the Spanish-American War, various Indian Wars and the regular establishment.

Projections into the future—estimating discharges of war veterans from service and deaths to continue at presently expected rates—indicate 21,549,000 war veterans remaining by 1965; 20,531,000 by 1970, and 19,141,000 by 1975. A drop to the December 7, 1941 veteran population level of 4,429,000 is expected by about A.D. 2008.

Miscellaneous

MEDICAL ADVISORY COMMITTEE

A Medical Advisory Committee to the National Aeronautics and Space Administration has been appointed with Dr. W. Randolph Lovelace II, Director of the Lovelace Foundation, Albuquerque, New Mexico, as Chairman.

Members of the Special Committee on Life Sciences are: Brig. General Donald D. Flickinger, USAF (MC); Captain Norman L. Barr, MC, USN; Lt. Colonel Robert H. Holmes, MC, USA; Lt. Commander John H. Ebersole, MC, USN; Dr. Robert B. Livingston, NIMH; Wright H. Langham, Los Alamos Science Lab.; and Orr Reynolds, Dep't. of Defense.

BOOKLET

Understanding Aphasia—A guide for Family and Friends—(Patient Publication No. 2-1958) is a helpful guide published by the Institute of Physical Medicine and Rehabilitation of New York-Bellevue Center of which Dr. Howard A. Rush is director.

Martha L. Taylor, M.S., director of speech and hearing services at the Institute is author of this booklet. Copies may be obtained for 50¢ each by writing to the Institute at 400 East 34th St., New York 16, N.Y.

PERIODICAL

Technical Translations is a semi-monthly publication which begins this month. It is designed to serve as a central source of information in the United States on Russian

and other technical translations available to science and industry.

Orders should be addressed to OTS, U. S. Dep't. of Commerce, Washington 25, D.C. Single copies will be 60¢; subscription will be $12 a year ($4 additional for foreign mailing).

HEALTH SCHOLARSHIPS

The National Foundation (formerly The National Foundation for Infantile Paralysis) has established a multimillion dollar scholarship program designed to assist students of medicine, nursing, physical therapy, occupational therapy and medical social work.

This new Health Scholarship Program will encourage a younger age group to select a career in one of the professions at a time when they are looking to their future full of idealism and the desire to be of service in the world.

Local chapters of the Foundation may be contacted or write to The National Foundation, 800 Second Ave., New York 17, N.Y.

ANTIBIOTICS

Antibiotics and some other drugs may be sent to Russia and satellite countries now provided individual export licenses are issued according to the Department of Commerce. Some countries have imposed an embargo on these drugs, namely Communist China, North Korea and North Vietnam. Why such an embargo should be imposed when these products offer so much relief for the common man is not understood.

MEETING

The American College of Allergists Graduate Instructional Course and Annual Congress will be held March 15-20, 1959 at the Mark Hopkins Hotel, San Francisco, California. For further information write to John D. Gillaspie, M.D., 2049 Broadway, Boulder, Colo.

POSTGRADUATE COURSE

The 12th Annual Postgraduate Course on Diseases of the Chest will be held in Philadelphia, March 30-April 3, 1959. Tuition is $100.

For further information address: Executive Director, American College of Chest Physicians, 112 East Chestnut St., Chicago 11, Ill.

Honor Roll

Since the publication of our last list, the following sponsored one or more applicants for membership in the Association:

Major Edward A. Barrett, MC, USAR
Dr. I. Pilot
Med. Dir. Max M. Van Sandt, USPHS
Lt. Col. Jule E. Lane, ANC, USAR
Col. Don Mace, VC, USA
Major A. Christopher, DC, USA
Peter A. Delmonico, M.D.
Col. L. P. Zagelow, USAF (MSC)
Lt. Cdr. Ludwig R. Pesa, USPHS
Phar. Dir. George F. Archambault, USPHS
Phar. Dir. Thomas A. Foster, USPHS
Dr. K. L. Classen
Dr. W. B. Hubbard
Col. George R. Carpenter, MC, USA
Lt. Col. Bernard Aabel, MSC, USA
Maj. Lucy P. Brazeal, ANC, USA
Lt. Col. Joseph E. Hodge, USAF (MSC)
Col. Anthony Ruppersberg, J., MC, Ohio NG
Lt. Col. Hu A. Blake, MC, USA
Lt. Col. James B. Couch, USAF (VC)
LCdr. Margaret W. MacKay, (NC) USN
Capt. Glen A. Brough, MC, USNR
Capt. John H. Moore, (MC) NYANG
Col. George B. Green, USAF (MC)
Rear Adm. I. L. V. Norman, (MC) USN
Lt. Col. Edmund G. Beacham, MC, Md. NG
Lt. Col. James Chapman
Col. Warren C. Eveland, MSC, USA
Dr. Irving Shiner
Mary T. Burke, USPHS

DEATHS

LAWTON, William H., Colonel, U. S. Air Force, Medical Corps, Retired, died on November 6, 1958, at the Eglin Air Force Base Hospital, Flordia. Colonel Lawton was the winner of the 1958 McLester Award of our Association which was awarded posthumously at the 65th Convention on November 19th. He is survived by his wife who resides at 3301 North Indian River, Fort Pierce, Fla.

MEETER, Edward H., Lieutenant, U. S. Navy, Medical Service Corps, Retired, died at the U. S. Naval Hospital, San Diego, Calif., on November 11, 1958, at the age of 66. He is survived by his wife, Floy, of San Diego.

TEBOW, Louis E., Captain, U. S. Navy, Medical Corps, died at the U. S. Naval Hospital, Memphis, Tenn., on October 27, 1958. He was serving as Chief of Surgery at that hospital at the time of his death. During World War II he volunteered for duty with the torpedo boat squadron. He is survived by his widow, the former Miss Katherine Duncan of Tamaroa, Ill., who is a licensed physician and two children. Interment was at Tamaroa, Ill.

ELLER, William D., Captain, A.U.S., Medical Corps, died December 9, 1958, at New York City at the age of 48. He was a graduate of the University of Arkansas in 1941 and was associated with his brother, William D. Eller, M.D., 745 Fifth Avenue, New York City, in the practice of dermatology.

NEW BOOKS

Books may be ordered through this Association.

The Army Air Forces in World War II, Services Around the World. Vol. VII, edited by Wesley F. Craven & James L. Cate. The University of Chicago Press, Chicago, Ill. Price $8.50.

Essentials of Clinical Neuroanatomy and Neurophysiology. John T. Manter, Ph.D., M.D. F. A. Davis Co., Phila., Pa. Price $3.00.

System of Ophthalmology, The Eye in Evolution. Vol. I. Edited by Sir Stewart Duke-Elder, G.C.V.O., M.A., LL.D., Ph.D., D.Sc., M.D., D.M., F.R.C.S., F.R.C.S.E., F.A.C.S., F.R.A.C.S. The C. V. Mosby Co., St. Louis, Mo. Price $27.50.

Twenty Thousand Nurses Tell Their Story. Everett C. Hughes, Helen M. Hughes, and Irwin Deutscher. J. B. Lippincott Co., Phila., Pa. Price $5.75.

One Mind Common to All. Earl D. Bond, M.D., The Macmillan Co., New York. Price $4.50.

The Reintegrative Process in a Psychoanalytic Treatment. Vol. III of The Integration of Behavior. Thomas M. French, University of Chicago Press, Chicago, Ill. Price $10.00.

Pratique Du Laboratoire. Ch. Jaulmes, A. Jude, J. Querangal Des Essarts. Masson et Cie, Editeurs, Paris 6, France. Price Fr. 6,500.

A Guide to the History of Bacteriology. Thomas H. Grainger, Jr. The Ronald Press Co., New York, N.Y. Price $4.50.

Essentials of Therapeutic Nutrition. Solomon Garb, M.D. Springer Publishing Co., Inc., New York, N.Y. Price $2.00.

Handbook of Cardiology for Nurses, Walter Modell, M.D., Doris R. Schwartz, R. N. Springer Publishing Co., New York, N.Y. Price $4.50.

Cyclopropane Anesthesia. Benjamin H. Robbins, B.A,. M.S., M.D. The Williams & Wilkins Co., Baltimore, Md. Price $9.00.

Treatment in Internal Medicine. Harold T. Hyman, M.D. J. B. Lippincott Co., Phila., Pa. Price $12.50.

Practical Leads to Puzzling Diagnoses. Walter C. Alvarez, M.D., D.Sc., J. B. Lippincott Co., Phila., Pa. Price $9.00.

Tuberculosis: Prevention and Control. H. W. Hetherington, M.D., M.R.C.P., and Fannie W. Eshleman, R.N., B.S. G. P. Putnam's Sons, New York, N.Y. Price $6.50.

Leukemia. William Dameshek, Frederick Gunz, M.D., Ph.D. Grune & Stratton, Inc., New York, N.Y. Price $15.75.

Progress in Neurology and Psychiatry. Vol. XIII. E. A. Spiegel, M.D. Grune & Stratton, Inc., New York, N.Y. Price $12.00.

Cardiovascular Sound in Health and Disease. Victor A. McKusick, M.D. The Williams & Wilkins Co., Baltimore, Md. Price $15.00.

Chirurgie Du Syndrome D'Ankylose Stapedo-Vestibulaire—Techniques et Indications Dans Le Traitement de la Surdite. Henri Martin and Andre Persillon. Masson et Cie, Editeurs. Paris 6, France. Price Fr. 2,500.

Le Catheterisme du Coeur Droit et des Arteres Pulmonaires en Pneumologie. Pierre Trocme et Jacques Chedal. Masson et Cie, Editeurs, Paris 6, France. Price Fr. 1,600.

Poliomyelitis, Papers and Discussions Presented at the Fourth International Poliomyelitis Conference. J. B. Lippincott Co., Phila., Pa. Price $7.50.

BOOK REVIEWS

A THERAPY FOR ANXIETY TENSION REACTIONS. Gerhard B. Haugen, M.D., M.P.H., Ass't., Clinical Professor of Psychiatry, University of Oregon Medical School; Henry H. Dixon, M.D., Clinical Professor and Head of the Dep't. of Psychiatry, University of Oregon Medical School; and Herman A. Dickel, M.D., Associate Clinical Professor, University of Oregon Medical School. 110 pages. The Macmillan Company, New York. Price $3.50.

Teaching tense, anxious patients with psychosomatic ailments how to relax is the basic theme of this interesting monograph.

Following a description of anxiety tension reaction are brief discussions of etiology, pathogenesis and "neurophysiologic explanation." Primary therapy, as practiced by the authors, consists in instructing patients exactly how to relax physically and progressively, commencing with the muscles of one forearm and hand. During frequent, brief office visits patients are also helped to understand the background of their symptomatology. Treatment is continued until patients are able to relax completely, permitting relief from somatic as well as from psychic complaints. Three case histories are very instructive.

Not written primarily for psychiatrists, this excellent monograph offers one practical and successful method for treating psychosomatic illness in everyday office practice.

COL. H. P. MARVIN, USA, RET.

HEART DISEASE IN INFANCY AND CHILDHOOD. By John D. Keith, M.D., Ass't. Professor of Pediatrics, Univ. of Toronto Faculty of Medicine; Richard D. Rowe, M.B.(N.Z.), F.R.C.P. (Edin.), Clinical Teacher, Dep't. of Pediatrics, Univ. of Toronto Faculty of Medicine; and Peter Vlad, M.D., Instructor in Pediatrics, Dept. of Pediatrics, University of Buffalo School of Medicine. 877 pages, illustrated. The Macmillan Company, New York. Price $22.50.

"Heart Disease in Infancy and Childhood" provides a very comprehensive review of congenital and acquired heart disease in children. The opening chapters provide an excellent review of the fundamentals required by cardiologists of today to establish diagnosis so that indicated medical and surgical corrections can be instituted. These are followed by very lucid chapters on the Embryology of Congenital Heart Disease by J. W. A. Duckworth, M.D. and Familial Occurrence of Congenital Heart Disease by Irene Uchida, Ph.D.

Thereafter, every cardiac abnormality known to occur in childhood is there discussed in a clearly understandable manner abetted by instructive illustrations including graphs, x-rays, charts, angiocardiograms and electrocardiograms.

It was rather surprising to learn that congenital heart disease in children is now more than ten times as common as rheumatic, but such is clearly documented by the experiences of these three authors in the Toronto Hospital for Sick Children.

There are three practical appendices, the first of which, by W. T. Mustard, M.D. and F. G. Doland, M.D. on Pre and Postoperative Care, provides practical instruction in these often neglected phases. Drug Therapy and an outline summary of Congenital Heart Disease comprise the other two appendices.

To their own vast experience in pediatric cardiology the authors have correlated the observations and reports of cardiologists and thoracic surgeons of other countries. An extensive list of references is provided at the end of each chapter.

This most worthy book is highly recommended to those medical officers concerned with pediatrics and heart disease in children and to thoracic surgeons whose fields of endeavor in pediatric cardiology are always expanding. It should find a place in the medical libraries of all larger medical facilities.

CAPT. JULIAN LOVE, USN, RET.

MENTAL HEALTH IN INDUSTRY. By Alan A. McLean, M.D., Psychiatric Consultant, International Business Machines Corp.; and Graham C. Taylor, M.D., Allan Memorial Institute of Psychiatry, McGill University. 262 pages. McGraw-Hill Book Company, Inc., New York, Toronto, London. Price $6.50.

The maintenance of mental health in industrial settings is here described in readable and practical detail, valuable alike to employees, employers, and the medicopsychologic service professions. Philosophy, definitions, and recommendations are uncomplicated; especially so as to the dynamics of personality development, the mechanisms of defense, and anxiety. Illustrative cases and references are timely and adequate.

Work meanings, rôles, supervision; conformity and stresses; "compensation neurosis"; use and

abuse of psychologic tests: these and many more are skilfully handled. Matters of middle-age employment and of retirement deserve greater attention than is given. The authors' liberal-permissive recommendation that certain borderline-schizoids and -paranoids be hired for specific jobs, could be debated.

An attitude of firm neutrality between labor and management is stressed as essential to an industrial psychiatrist; professionally he is to provide diagnoses, brief psychotherapy, and prophylactic education—toward which a useful chapter of visual aids is included. He will discourage a facile "time-off" therapy, no panacea for neurotic symptoms or any depression. The importance and techniques of interviewing are emphasized.

COL. JAMES H. HUDDLESON, USAR, RET.

THE MEDICAL MANAGEMENT OF CANCER. A Monograph by Henry D. Diamond, M.D., F.A.C.P., Associate Attending Physician, The Medical Neoplasia Service of the Dep't. of Medicine, The Memorial Center for Cancer and Allied Diseases, New York. 179 pages, illustrated. Grune & Stratton, New York and London. Price $6.75.

This modern medical monograph is a concise, very well written book covering the non-surgical treatment of malignant diseases. It does not argue with the surgical approach in general, but confines discussion to those malignancies where medical therapy is the primary form of treatment, and those which have recurred after surgery or are unresectable. Because of this sensible approach, this is indeed a valuable book.

The exact place for the use of radioactive isotopes, newer chemotherapeutic agents, hormones, and the newer more powerful forms of radiation, are delineated. At the end of each chapter a resume of therapeutic agents is included, thus giving the reader a quick reference for refreshing his memory. A well selected though brief bibliography is also included in each chapter for the practitioner who desires to follow up on the subject without wading through the extensive and so often conflicting mass of articles appearing each year.

The chapters on subjects in which the primary treatment is considered to be medical are: Malignant Lymphomas; Leukemias; and Plasma Cell Myelomas. Those in which the primary treatment is surgical, but where medical therapy is supplemental are: Neuroblastomas; Carcinoma of the Lung; Carcinoma of the Thyroid; Carcinoma of the Ovary; Carcinoma of the Breast; and Carcinoma of the Prostate. An appendix is included for the intercavitary injection of radio-isotopes, including gold, phosphorus, and yttrium.

It must be stressed that this is not a complete reference book on this subject. Obviously, in order to maintain brevity, any of the newer drugs cannot be discussed as fully as many would desire. For a quick reference, however, this is an excellent monograph.

CAPT. L. J. POPE, MC, USN

ALCOHOLISM. A Monograph. Arnold Z. Pfeffer, M.D., Consultation Clinic for Alcoholism, New York University-Bellevue Medical Center. 98 pages. Grune & Stratton. New York and London. 1958. Price $4.50.

The recognition of the problem of alcoholism and the measures used to cope with it, particularly in the larger companies, is explained in this book.

Valuable employees not only in the fabricating department but also in the executive departments can become "problem drinkers." Conservation of this manpower through rehabilitation is advisable and should be attempted. Means of accomplishing this are set forth in this monograph.

There is a need for early recognition of the problem of alcoholism, and a sympathetic but firm attitude on the part of the employer. A definite plan must be adopted. The use of outside established clinics on a referral basis is considered advisable.

The problem of alcoholism is ever with us. This book is not written for the alcoholic but for those that must deal with him. It is a valuable treatise on the rehabilitation of the alcoholic.

R. E. B.

NOISE AND YOUR EAR. By Aram Glorig, Jr., M.D., Director of Research, Research Center of The Subcommittee on Noise in Hearing, Academy of Ophthalmology and Otolaryngology, Los Angeles, Calif. 152 pages, illustrated. Grune & Stratton, New York and London. 1958. Price $6.50.

This is the first of a series of monographs designed for industrial physicians. Since the medical and legal problems of the effect of noise are so important, this subject was chosen for the first monograph.

Although this slender volume contains only 152 pages it is quite remarkable that it contains so many facts germane to its topic. From the history of noise and hearing as well as the history of the development of compensation laws, the author develops his subject through anatomy of the ear and theories of hearing, psychoacoustics, audiometry, hearing loss, effects of noise exposure, and conservation programs.

Dr. Glorig presents a sound re-appraisal of some of the false reasoning of many of the theories which surround the subject of deafness. Excellent general and specific references are included.

PHILIP H. SMITH, M.D.

LABORATORY MEDICINE—HEMATOLOGY. By John B. Miale, M.D., Professor of Pathology, Univ. of

Miami School of Medicine, Miami, Florida. 735 pages, 192 illustrations and nine plates. The C. V. Mosby Company, St. Louis. Price $13.75.

This is a fine addition to the list of texts on clinical pathology. It deals with Hematology exclusively in all its aspects. Concise, yet comprehensive, it covers all phases of (1) hemopoiesis, normal and abnormal, (2) blood and bone marrow cell morphology as revealed by supravital stains, phase contrast and electron microscopy, and Wright's stain (the latter plates are in color), (3) transfusion therapy including blood substitutes, (4) the hemolytic anemias, (5) aplastic anemia and the myeloproliferative syndromes and (6) hemostasis and blood coagulation. As stated in the foreword and preface, this book was developed to provide an integrated source of the laboratory tests that are available, when they should be used and how they are to be interpreted. Use of such broad and correlated knowledge is designed to avoid indiscriminate or excessive requesting of the laboratory procedures.

As the first in a series of texts on Laboratory Medicine, I recommend it highly as a standard reference for the practicing pathologist, clinical pathologist, internist and general practitioner. One can visualize this book becoming a standard text for clinical pathology courses in medical school curricula. Also, it seems well adapted for medical technology training schools. It has not been formulated along the lines of Wintrobe's Clinical Hematology since it doesn't deal with the clinical or prognostic aspects to any appreciable degree and the text under a given heading is generally much less extensive by comparison. Rather it presents in a most orderly manner of progression, condensed data pertinent to basic and advanced hematology accompanied by numerous very adequate classifications, tables and plates. A most extensive bibliography current through 1956 follows each chapter. The appendix furnishes a complete list of applicable hematology procedures.

If the others in this Laboratory Medicine series (Chemical Pathology and Microbiology are now in preparation) are as well done, this threesome will reside on many bookshelves.

MAJ. ROBT. F. DILLON, MC, USN

OPERATIVE SURGERY. Vol. 7 (set of 8). Breast and Genito-Urinary System. Charles Rob, M.C., M.Chir., F.R.C.S., Professor of Surgery, St. Mary's Hospital, London; and Rodney Smith, M.S., F.R.C.S., Surgeon, St. George's Hospital, London. Distributed in USA by F. A. Davis Co., Philadelphia. Price $19.50 per vol.

Under the authorship of a number of the leading urologists in England, a very comprehensive book has been produced. The articles on the different phases of urological surgery cover indications, contraindications, special equipment, pre-operative preparative preparation, anaesthesia, position of patient, post-operative treatment and complications. It is well illustrated with a short description of each step of the operation. The illustrations of kidney and ureter operations are particularly well done.

The field of urological surgery has been very well covered. However, there is one phase of urological surgery that is not mentioned which I think is very important—perineal prostatectomy. Since the vast majority of carcinomas of the prostate begin in the posterior lobe, it is the best approach for biopsy and radical prostatectomy. I also think it is the least shocking operation for old patients with large tumors and who are a poor operative risk.

There is no doubt that this book would be most welcome by a general surgeon faced with a urological operative problem. At times a well trained urologist could use it advantageously to refresh his memory on certain technical steps in an operation. As a urological surgeon who has devoted over thirty years to the specialty, I am delighted to add it to my library.

HOWARD C. SMITH, M.D.

THE MEDICAL ASSISTANT. A Guidebook for the Nurse, Secretary, and Technician in the Doctor's Office. By Miriam Bredow, Dean of Women, Eastern School for Physicians' Aides, New York. 430 pages, illustrated. The Blakiston Division, McGraw-Hill Book Company, Inc., New York, Toronto, and London. Price $7.50.

Since it is the office assistant who first greets the patient, it follows that she can help build a doctor's practice or lose patients for him. This volume was written for the person with no medical training and attempts to teach what the assistant has to do, how she should do it, and why it should be done. The author has successfully reached her goal. The book is clearly written and the concepts are well presented.

It would save any physician much time for him to give this book to his office assistant—even if she has been with him for years. This excellent volume is well illustrated and is highly recommended.

PHILIP H. SMITH, M.D.

PRINCIPLES OF RESEARCH IN BIOLOGY AND MEDICINE. By Dwight J. Ingle, B.S., M.S., Ph.D., Professor of Physiology, The Ben May Laboratory for Cancer Research, University of Chicago. 123 pages. J. B. Lippincott Company, Philadelphia and Montreal. 1958. Price $4.75.

The author of this introductory work on the methodology of bio-medical research is a research man. His book contains the chief elements of the basic mental work in scientific research and in medical practice, where it is also necessary to establish the truth.

We read about the assumptions made by scientists at the start of their investigations; then, we learn of the limitations of mind, the laws of causality, the laws of probability and chance, the sources of the possible errors and how they should be recognized, the ways how to test the truth and learn to set up experiments correctly.

Of course, the literature of scientific methods has many more exhaustive and detailed works in the same field, yet the special value of this author's work is in its shortness and clarity. The book can be recommended as a good outline for students and mature readers alike.

CLAUDIUS F. MAYER, M.D.

DYNAMIC ANATOMY AND PHYSIOLOGY. By L. L. Langley, Ph.D., LL.B., Associate Professor of Physiology, University of Alabama Medical Center; E. Cheraskin, M.D., D.M.D., Professor and Chairman of the Department of Oral Medicine, University of Alabama Medical Center; and Ruth Sleeper, R.N., Director of the School of Nursing, Massachusetts General Hospital. 719 pages, 313 illustrations. The Blakiston Division, McGraw-Hill Book Co., Inc., New York, Toronto, and London. Price $6.00.

A novel organization that cuts across the usual boundaries of subject matter and achieves a synthesis of selected data from several scientific disciplines is the outstanding characteristic of this book. Adapted to the needs of nursing students, the book begins with a basic orientation to anatomy and physiology. Following this, the specific anatomy and physiology of the several organ systems are presented. A simplified color atlas of human anatomy, a photographic series of the development of the human embryo and photographs of topographic human anatomy are additional features. The list of suggested readings contains numerous articles from nursing, health and hygiene periodicals.

The text is concise and liberally illustrated by simple, easily understood diagrams and photographs. In general, the outline of basic anatomy and physiology is broad, logical and well coordinated. Marked differences in the depth of detail are noted between equally important subjects. There is some lack of balance in the selection of representative illustrations. Rare, clinical examples are frequently chosen in place of common, less dramatic manifestations. Questions and problems at the conclusion of each chapter are well selected and adequately challenge the students' understanding of the subject matter. The binding, paper and printing are technically excellent.

The numerous fine features of this volume highly recommend it for student nurses.

JAMES D. GROSS, M.D.

THE PSYCHIATRIC HOSPITAL AS A SMALL SOCIETY. By William Caudill. Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass. Price $6.50.

This thought-provoking study of a small psychiatric hospital by an anthropologist focuses attention on the interactions and transactions between patients, personnel, and hospital milieu and should prove of interest to all disciplines participating in the care of psychiatric patients.

Careful observations, interviews with professional personnel, and analysis of a picture test similar to the T.A.T. is the backbone of his research data. Some of his conclusions while not new are worthy of consideration. He feels, for example, that the ability to exercise authority may be connected with freedom to meet and use opposition for creative purposes. Whether adaptive or task functions can be performed by the same persons responsible for expressive or therapeutic functions is also a pertinent idea expressed by him.

His analysis of the pyramiding paucity of communications between members of the psychiatric team—patients and personnel—over a twelve week period with its culmination in an open disturbance on the ward is an eloquent demonstration for the need for complete awareness by all personnel of the total milieu.

The need for clarification of the role of the psychiatric nurse in order to bring it into line with recent developments in psychiatry is demonstrated. Two points of special interest are his observations relative to—need for nurses to have interaction between open and closed wards as their patients are often concerned with both, and need to develop their nursing care of neurotic patients.

Many of his suggestions as to contributions of a clinical anthropologist to a psychiatric hospital are accomplished in the military setup by the Social Service Department. However, others are stimulating possibilities of the future.

MAJOR SELMA MOODY BRAWNER, ANC

THE CEREBROSPINAL FLUID. Production, Circulation, and Absorption. Ciba Foundation Symposium. Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch., and Cecilia M. O'Connor, B.Sc. 335 pages, 141 illustrations. Little, Brown and Company, Boston. Price $9.00.

This volume presents a comprehensive review of the current knowledge and status of research and theory relating to the production, circulation and absorption of the cerebrospinal fluid. The book consists of individual papers followed by general discussions between outstanding international authorities on the subjects covered. Newer techniques utilizing radioisotopes, electron microscopy and tissue culture are employed in furthering the understanding of the embryologic development, anatomy,

physiology and pathology of the arachnoid granulations, the choroid plexus, the chemistry of the blood-brain barrier and the nature of the formation and absorption of the cerebrospinal fluid. Among other subjects presented and discussed are the relationship of Vitamin A to the homeostasis of the cerebrospinal fluid; the development of hydrocephalus as related to the clinicopathologic disturbances in the formation and production of the cerebrospinal fluid; the surgical correction of hydrocephalus; and the physiology of spinal anesthesia with reference to its complications.

With the knowledge derived from these studies, some of the older theories of the past have been confirmed while others have been discarded or revised and still newer theories have been postulated. These all indicate the need and the direction for further research and these facets are well discussed. The text presents in its entity an excellent review of our knowledge of those factors concerned in the homeostasis of the cerebrospinal fluid and should be of most interest and value to the neurologist, neurosurgeon and those dealing with research related to the cerebrospinal fluid.

J. T. Horgan, M.D.

Illustrative Preoperative and Postoperative Care. By Philip Thorek, M.D., F.A.C.S., F.I.C.S., Professor of Surgery, Cook County Graduate School of Medicine; Attending Surgeon, of the Cook County Hospital. 98 pages, 60 illustrations. J. B. Lippincott Company, Philadelphia and Montreal. Price $5.00.

This brief compilation of basic and more or less well known data related to pre- and postoperative care is done in lucid and condensed fashion by the son of Dr. Max Thorek, Founder of the International College of Surgeons. Plastic and expressive drawings by Prof. Carl T. Linden of the University of Illinois School of Medicine greatly enhance the text's clarity.

About one third of the book is devoted to Parenteral Fluids, and Acidosis and Alkalosis. These complex subjects are handled with subtlety and explicitness in two chapters, and are among the highlights of the digest. Normal and pathophysiologic facts and figures are assembled and concisely discussed in relation to the clinical findings.

Brevity and clarity are the outstanding features of this practical and most instructive monograph. Dr. Philip Thorek has rendered a gratifying service by condensing the subject matter in a simple, factual and informative way. The text is written intelligibly and for practical purposes only, omitting theories and bibliographic notes.

This very handy book is of interest not just to the surgeon. It will attract the attention of any doctor regardless of whether engaged in general or specialized practice. It should be of special value to interns and residents for quick recapitulation of the pre- and postoperative essentials, and because of its perspicuity is highly recommended for study to the nursing profession.

The printing and arrangements of text and pictures are unusually well done and contribute to the book's attractiveness. Author, illustrator and publisher are to be commended.

Ernest G. Abraham, M.D., F.I.C.S.

Electrocardiography. By Michael Bernreiter, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Kansas Medical School. 134 pages, 92 figs. J. B. Lippincott Company, Philadelphia and Montreal. 1958. Price $5.00.

This is a brief, concise treatise of the basic fundamentals of electrocardiography in a simplified form. It is well illustrated by schematic diagrams and electrocardiograms. The electrocardiograms are clear and distinct and show the characteristic changes that are typical for the condition under discussion.

For the beginner this book could be recommended as an excellent introduction to electrocardiography or, for the practicing physician, a quick review of the basic principles in this subject.

Col. Doss O. Lynn, MC, USA

Action of Radiation on Tissues. An Introduction to Radiotherapy. By A. Lacassagne, Chief of Service of Pasteur Institute; and G. Gricouroff, Chief of the Laboratory of the Curie Foundation. Translated by Clarence C. Lushbaugh, M.D., and Gretchen R. Riese, M.S. 199 pages, illustrated. Grune & Stratton, Inc., New York and London. Price $6.25.

This is the first English translation of the completely revised second edition of Lacassagne's and Gricouroff's monograph, "Action of Radiation on Tissues," published by Masson and Cie, Paris, France in 1956. The original monograph is a comprehensive review of literature on the effects of ionizing radiation upon the tissues of man and experimental animals which brings up to date their first edition which reviewed radiobiological research from 1892-1942 and which was lost to us during World War II.

Appended to each of the fifteen (15) chapters is an exhaustive bibliography to which the translators have added further references mostly American thus increasing the usefulness of this work. These references alone are worth the price of the volume.

Chapter I is devoted to ideas on the biological actions of radiation. Chapters II-XIII, inclusive, deal with reactions on individual anatomical systems while Chapter XIV details the general manifestations produced by total body irradiation. The final chapter, Chapter XV, covers the action of radiation upon pathological tissues. Throughout each chapter

the original authors add their own analytical comments based upon their years of extensive investigation and clinical experience which is no small contribution in itself.

While the authors make no claims as to the completeness of the review they have accomplished a remarkable piece of work and the translators are to be complimented on an outstanding job in keeping the clarity and forcefulness of the original work. This monograph will be of inestimable help to all students of ionizing radiation and particularly to those beginners in radiation therapy. It should be in every medical library for reference alone.

COL. JOHN A. ISHERWOOD, MC, USA

FOUNDATIONS OF NURSING. 2nd Ed. By Janet S. Ross, R.G.N., R.F.N., Examiner to the General Nursing Council for Scotland; and Kathleen J. W. Wilson, R.G.N., S.C.M., Principal Tutor, Preliminary Training School, Royal Infirmary, Edinburgh. 292 pages. The Williams & Wilkins Co., Baltimore, exclusive U.S. agents. Price $4.00.

This book was written in Edinburgh primarily for the first-year student nurse. The author hoped to establish foundations on which the student nurse could build her subsequent knowledge.

Terminology used varies slightly with our terms, however, that adds distinction.

Subjects such as History of Nursing, Professional Adjustments, Dietetics, Materia Medica, Asepsis Technique and Nursing Arts are all discussed. The chapter on "Administration of Medicine" is excellent and certainly would be a helpful reference to have available on hospital wards.

In teaching non-professionals, I feel this book aids as a valuable source of review as well as fulfilling its purpose for the first-year student nurse.

LT. SUZANNE W. TOEWS, NC, USN

DRUGS OF CHOICE, 1958-1959. Edited by Walter Modell, M.D., Associate Professor of Pharmacology, Cornell University Medical College; 37 contributors. 931 pages. C. V. Mosby Company, St. Louis. Price $12.75.

This book, written by 37 contributors including the editor, is designed to help the busy clinician select the drug of choice for a particular therapeutic application. Presentation of the expert opinion of the contributors, based on their specialized knowledge and experience, accomplishes this aim.

There are 35 chapters, the first of which concerns general principles of the choice of drugs. The other chapters deal with particular clinical problems by discussing the clinical condition, considering the several drugs used in this condition, and presenting the nature of the data which makes one drug more desirable. Selected references are included.

A Drug Index after each chapter gives capsule accounts of the drugs, their dosage forms, and in many cases, proprietary names and manufacturers. The Drug Index does not help the physician make his choice; this information is available only in the text. The Drug Indexes are not all-inclusive, but they are representative.

To the best of the reviewer's knowledge, this volume is unique. It should prove extremely valuable to the physician attempting to choose the best drug from among the wealth of products commercially available for the treatment of a given condition. The book should also be helpful to Pharmacy and Therapeutics Committees of hospitals in choosing drugs to be stocked by the Pharmacy.

LT. RICHARD L. SEDAM, USN

SKIN GRAFTING. 3d Edition. By James Barrett Brown, M.D., Professor of Clinical Surgery, Washington University School of Medicine; and Frank McDowell, M.D., Associate Professor of Clinical Surgery, Washington, University School of Medicine. 411 pages, 328 figures and 6 color plates. J. B. Lippincott Company, Philadelphia and Montreal. 1958. Price $15.00.

All surgeons encounter or create skin defects which are not reparable by straightforward closure. The answers to their resurfacing problems are presented clearly and in detail in this text. The authors have made a special point of elaborating upon the niceties of technique and judgment which have made the loss of even a part of a skin graft a rare and rather awful event in their clinic.

In addition to the sections on basic principles there are complete but concise treatments of the special problems posed by burns and defects in different anatomic locations. The reader is impressed with the necessity for treating each patient as a unique personality and tailoring the reconstructive program to fit his particular requirements. Throughout the book there is repeated the sound advice that the best plan is the simplest one which will yield a functional result. The authors have always felt that skillfully executed free skin grafts will secure repairs that are as good as or better than pedicled flaps in most situations. In this second revision of their now classic work, however, they have greatly expanded the sections on flaps and offer a wealth of helpful information in designing such operations and avoiding the pitfalls of pedicle surgery. The new edition also contains much new material in the special applications sections.

The manufacture of the current revision is much improved. Photographic reproduction has been handled brilliantly. The length of the index has been doubled by fuller cross-referencing and affords unusually handy access to the diverse subject matter. The new two column page format makes for easier reading.

This work should be accessible to all surgeons who would offer their patients the utmost in reduction of deformity.

LT. COL. JACK TENERY, MC, USA

PEDIATRIC INDEX. A Guide to Symptomatological Diagnosis and Current Management. By Edwin F. Patton, M.D., Beverly Hills, Calif. 639 pages. The C. V. Mosby Company, St. Louis. 1958. Price $13.50.

Dr. Patton has spent six years in the compilation of this book drawing on thirty-five years of active pediatric practice and experience. To write such a fine book is an admirable accomplishment, because it is the most difficult type of medical literature to write. It is concise, well organized, and completely covers all the important material on most pediatric subjects whether it be medical, surgical, orthopedic, allergic, Eye, Ear, Nose, Throat, or neurological. The author is to be commended for his thoroughness in the task of gathering the huge amount of excellent information in 639 pages in a useable fashion to both medical students and their teachers, to general practitioners, nursing personnel, and certainly pediatricians.

The preface of *Pediatric Index* should be read before beginning the use of the book. The author is well aware of the shortcomings and pitfalls of any index type of book. It contains a great amount of helpful information, making the book more useful.

If this book is kept current, it will be a wonderful asset to pediatric practice over many years.

ALBERT E. HENSEL, JR., M.D.

MODERN CLINICAL PSYCHIATRY. 5th Ed. By Arthur P. Noyes, M.D., Superintendent of Norristown State Hospital, Pa.; and Lawrence C. Kolb, M.D., Professor, Department of Psychiatry, College of Physicians and Surgeons, Columbia University. 694 pages. W. B. Saunders Co., Philadelphia and London. Price $8.00.

Covering today's theory and practice of clinical psychiatry is a formidable task, superbly accomplished by these distinguished scholars. A concise and rewarding chapter on Psychiatry and the Law is now added. Among the book's most notable sections are those on dynamics, personality development, mental mechanism, sociopathy, and each type of therapy. Index and bibliographies are of the best.

Relations between structure and personality as claimed by Sheldon and others, are carefully described. However, beliefs that certain specific relations "must" exist are somewhat discounted.

Aspects of the so-called "therapeutic community" are traced in the excellently detailed presentation of group therapies, but more comment on that vogue in administration—if it persist—could be welcome in a succeeding edition.

This volume is wholeheartedly recommended to everyone interested in its subject.

COL. JAMES H. HUDDLESON, USAR, RET.

DIAGNOSTIC LABORATORY HEMATOLOGY. 2nd Revised Edition. By George E. Cartwright, M.D., Professor of Medicine, College of Medicine, University of Utah. 250 pages. Grune & Stratton, New York and London. Price $6.75.

This brief manual is intended primarily for use in laboratories in doctors' offices and other small laboratories and for this reason the author selects the most practicable methods. Procedures are described in "cook book" fashion but there are also short paragraphs on interpretation where indicated. In addition to the usual description of the complete blood count technics, there are sections on examinations concerned with hemolytic disorders including the determination of fetal hemoglobin and the detection of abnormal hemoglobins by electrophoresis; examinations of blood, urine and stool pigments related to hemoglobin; examinations related to blood clotting and sections relating to the "L. E." phenomenon, to heterophile antibodies, to cryoglobulins, euglobin and Bence-Jones protein.

The book does not include descriptions of blood grouping and Rh-typing methods. There are a few black and white illustrations but no colored plates showing blood cells. However, the characteristics of blood cells are shown by diagrams which emphasize differential points.

This manual will be found useful in any laboratory performing hematological examinations.

COL. HUGH R. GILMORE, JR., USA, RET.

A SYNOPSIS OF SURGICAL ANATOMY. 8th Ed. By Alexander Lee McGregor, M.Ch. (Edin.), F.R.C.S. (Eng.), Consulting Surgeon, Johannesburg General Hospital, Honorary Research Associate, University of the Witwatersrand. 808 pages, 766 illustrations. The Williams & Wilkins Co., Baltimore, exclusive U.S. agents. Price $7.00.

This work has proven its lasting practical value through 8 editions and 9 reprintings during the past 25 years. The schemata employed and the presentation, by correlation and contrast, of the carefully selected facts, constitute the outstanding merits of the book. It has become indispensable to the senior student, the general practitioner and surgeon as well as to the surgical specialist.

The author has made available a wealth of information on surgical anatomy relative to normal and abnormal conditions. The section on anatomy involved in the surgical approach of the sympathetic nervous system has been rewritten. Sections on diaphragmatic hernias, paragangliomas, adrenalectomy, and on injuries to the large lymph ducts are included for the first time. Many new lucid and instructive figures and diagrams by Dr. E. A. Thomas have been incorporated in the text. The entire work has been revised and brought into line with present concepts.

The concise treatment of the subject matter, the independence of the chapters which are complete and separate essays, and a large and distinct index

increase the compendium's usefulness.

There can be little doubt that the eighth edition of this most informative synopsis will add many new friends to all its old ones in the medical profession.

ERNEST G. ABRAHAM, M.D., F.I.C.S.

AIDS TO MEDICAL DIAGNOSIS. 8th Ed. By G. E. Frederick Sutton, M.C., M.D. (Lond.), F.R.C.P., Teacher in Clinical Medicine, University of Bristol. 399 pages. The Williams & Wilkins Co., Baltimore, exclusive U.S. agents. Price $3.50.

Here is the 8th edition of a 400 page, pocket size reference, published in Britain. Completely revised and brought up to date by the author and his Collaborators, it contains nine chapters covering infectious diseases as well as diseases of the abdomen, blood, heart and blood vessels, lungs and pleurae, endocrine organs, kidney, nervous system and joints. The last chapter is entitled "The Electroencephalogram." Each paragraph is brief and to the point. Included are new paragraphs on such conditions as actinomycosis, psittacosis, furospirillal bronchitis, mediastinitis, headaches and others. Recommended as a handy, well arranged reference for medical students, interns and practitioners.

COL. H. P. MARVIN, USA, RET.

PEDIATRIC SURGERY. By Orvar Swenson, M.D., F.A.C.S., Professor of Pediatric Surgery, Tufts University School of Medicine. 750 pages, 980 illustrations. Appleton-Century-Crofts, Inc., New York. Price $20.00.

Doctor Swenson is one of the leading pediatric surgeons of the United States. He has contributed much to improve the results in a number of conditions which require surgical treatment in the childhood age group.

Now he has drawn on his lifetime experience to produce a fascinating book which is quite unique and very intensely personal. Almost every page has the personal stamp of the man who wrote it.

That pediatric surgery can only succeed if the surgeon understands the physiologic variations which differentiate infants and children from adults is emphasized. The surgeon should have such knowledge himself and not rely upon pediatricians, internists and others; in other words, the pediatric surgeon needs special knowledge, skills and techniques in addition to broad basic training in surgery.

The introductory chapters are devoted to orientation in the field of pediatric surgery, the physiologic variations of children, the psychologic and physiologic care of the child, the setup for the operating room and choice of incision. A clever technique for atraumatic induction of anesthesia with Cyclopropane, shown in photographs, highlights the chapter on anesthesia in children.

Thirty-two subsequent chapters cover specific conditions, including the pre- and postoperative management of each particular lesion. Included are descriptions of the surgical treatment of many simple conditions which may arise in infants or children to plague the less experienced surgeon. These chapters with accompanying illustrations are brilliant.

Pediatric Surgery is printed on good quality paper, nicely bound, and has clear type. It has been meticulously proofread. The book is full of excellent illustrations so that it reads rapidly and lucidly. Little emphasis is laid on statistics, nor on the more esoteric aspects of a particular condition. The text is very practical and concise. There is a short list of references at the end of each chapter and a useful index at the back.

The book is recommended universally for surgeons and even more for pediatricians. It will be a fine text for teaching student surgeons because of the profuse and excellent illustrations.

MAJ. EDWARD J. TOMSOVIC, MC, USA

VETERINARY PROTOZOOLOGY. 2d Ed. By U. F. Richardson, B.Sc., M.R.C.V.S.; and S. B. Kendall, B.Sc., Ph.D., A.R.C.S., M.R.C.V.S. 260 pages, illustrated Oliver and Boyd, Edinburgh and London; distributed by The Macmillan Company, New York. Price $4.50.

This second edition of *Veterinary Protozoology* has been revised considerably and enlarged slightly. The greatest enlargement is in the chapters on "Chemotherapy" and "Techniques and Equipment." The listing of all references at the end of the book is an improvement over the listing of references by chapters as in the first edition. In view of the amount of work that has been done since 1950, it seems that there should have been many more references to work published during that period.

The brevity necessary in the production of a handbook of this type results in one of the greatest shortcomings of the book: the presence of a number of errors as the result of brief generalizations in the text. For example, the authors state that the diagnosis of *Entamoeba histolytica* is made by the demonstration of trophozoites in diarrhoetic feces or cysts in formed feces. This generalization is true for most animals, but it should have been stated that cysts of this parasite are not passed (except in extremely rare instances) in the feces of the dog.

The discussion of treatment and other control measures for coccidiosis of the different hosts is so brief as to be of little value. It is especially regrettable that no mention is made of the very effective method (developed by Davis) of controlling coccidiosis in calves by means of the rotation of isolation pens.

The description of the gross lesions of ovine coccidiosis and of the relationship of the lesions to

the activity of the parasite is inadequate.

Present evidence does not support the statement that ". . . domestic animals, particularly dogs, play an important part in the transmission of the disease (toxoplasmosis) to man."

Even though brief, some of the discussions are very good, as for example the caution regarding the reliance on numbers of oocysts in making a diagnosis of clinical coccidiosis.

The publisher suggests that the text will be of use not only to the undergraduate student, but also to the graduate student and field officer. It is anticipated that the book will be of little value to the graduate student (primarily because of its brevity), but it has much to recommend it as a guide for the undergraduate. It will probably be of greatest use to the field officer, especially the veterinarian who received his academic training in the United States and is working in the tropics.

W. S. Bailey, D.V.M.

Disinfectants—Their Values and Uses. By W. E. Finch, Disinfectants Division, The Prince Regent Laboratories, Silvertown, London. 188 pages. The Macmillan Company, New York. 1958. Price $5.50.

The author has had extensive experience wrestling with problems of disinfectant manufacturing. So long as he confines himself to topics such as formation methods, coal tar disinfectants, mixing tanks and liquefying ovens, Mr. Finch seems to have much of value to say.

But he should have stopped there, because the remainder of the book has serious deficiencies. His objectives as stated in the Preface were "to give a balanced survey of all types of disinfectants and to indicate uses and limitations. . . ." Neither objective was reached. One of the newer classes of disinfectants is missing entirely, e.g. the iodophors which in their dozens of different formulations are used extensively in this country. And the uninformed reader will get the impression that the mercurials are good bactericides, whereas it has been generally accepted for many years that their activity is limited almost entirely to bacteriostasis.

No doubt some readers will find useful the glossary of terms and the scattered paragraphs on toxins, the spread of disease, and other topics having little or no connection with disinfectants. They will discover, however, that some of the pertinent material is not easily located. For example, brief discussions dealing with the disinfection of surgical instruments appear, among other places, on pages 114, 134, and 143, none of which appears among the Index references. Finally, there is little information in this book which can be applied by physicians or nurses in their everyday practice.

Earle H. Spaulding, Ph.D.

Cardiovascular Diseases. 3rd Ed. By David Scherf, M.D., F.A.C.P., Professor of Clinical Medicine; and Linn J. Boyd, M.D., F.A.C.P., Professor and Director of Medicine, both of New York Medical College, Flower and Fifth Avenue Hospitals. 829 pages. Grune & Stratton, New York and London. Price $17.75.

This book, in its third edition, has many outstanding features. It is written in an organized, clear, concise manner and is exceptionally readable. Foremost, emphasis has been placed on the clinical and therapeutic aspects of cardiovascular disease. In reading this book it becomes obvious that the authors have not only had unusually wide experience in this specialty but have also maintained a position of leadership in several aspects based on astute observation and rational interpretations of clinical and pathological evidence. The chapter on diseases of the myocardium is especially timely. A chapter on peripheral vascular diseases is included and is considered a valuable asset to this book. It is also commendable that the subject of electrocardiography was not attempted in detail but electrocardiograms were used only where indicated in discussing various conditions. A good bibliography is included. A few of the rarer conditions are mentioned only briefly but this is not a criticism, as it is considered appropriate in order to keep within the scope and size of this volume.

This book is highly recommended to those physicians or students who have use for a good up-to-date reference in cardiovascular diseases. It has some of the clearest descriptions and discussions concerning pathological physiology, uses of drugs, clinical diagnosis and treatment that this reviewer has seen.

Col. Doss O. Lynn, MC, USA